

TECHNOLOGY

REVIEW

May 1956

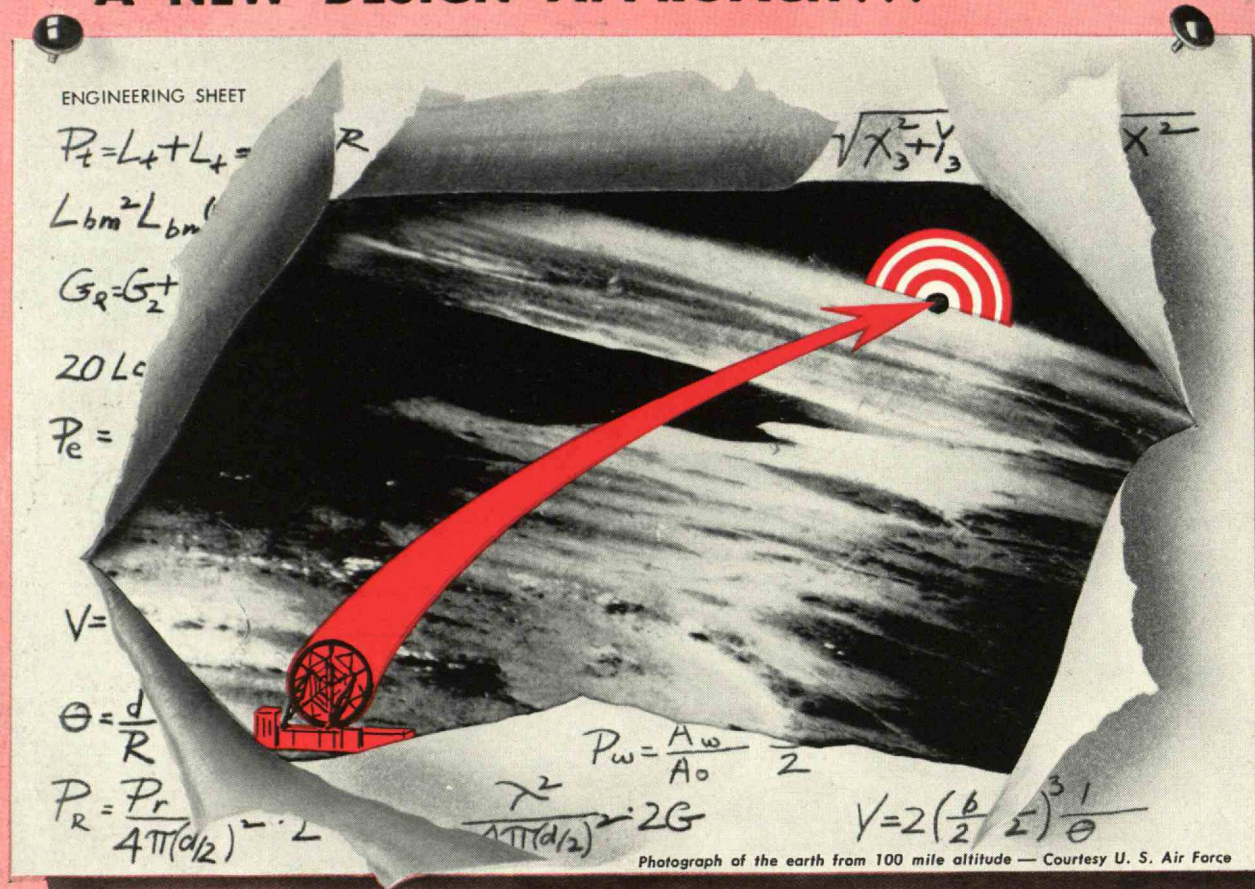


technology review

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BEYOND-THE-HORIZON TRANSMISSION

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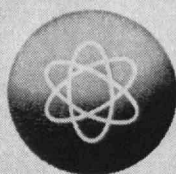
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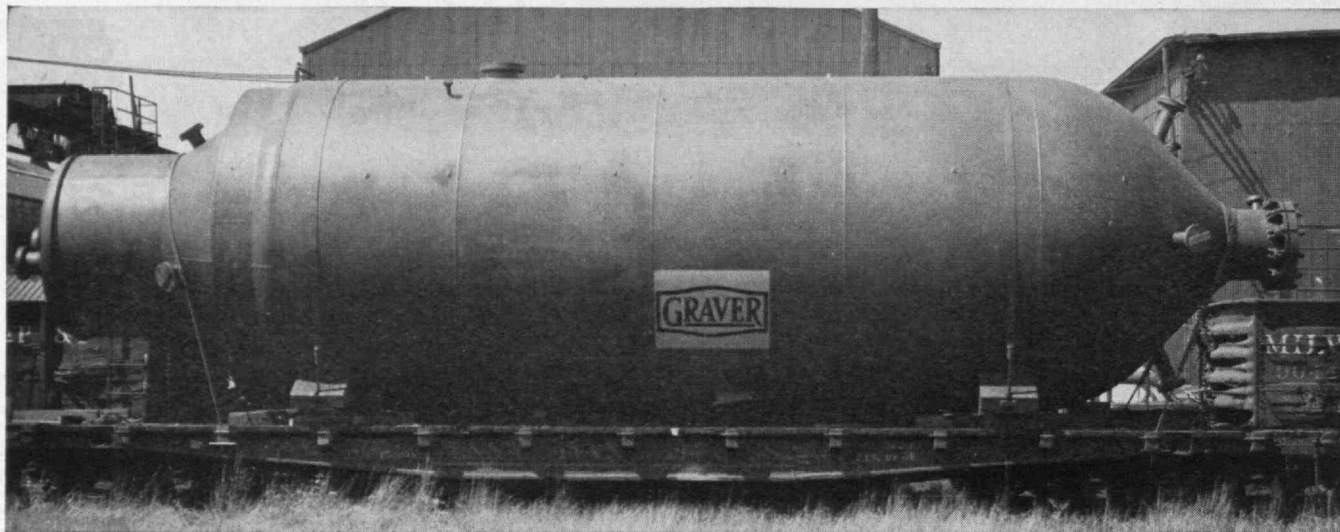
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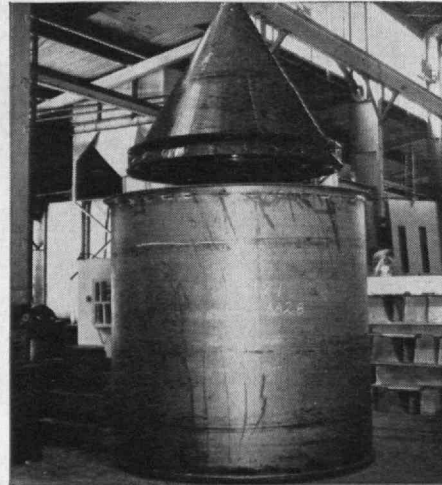
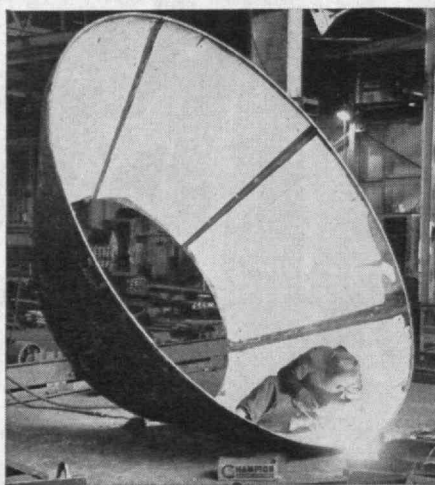
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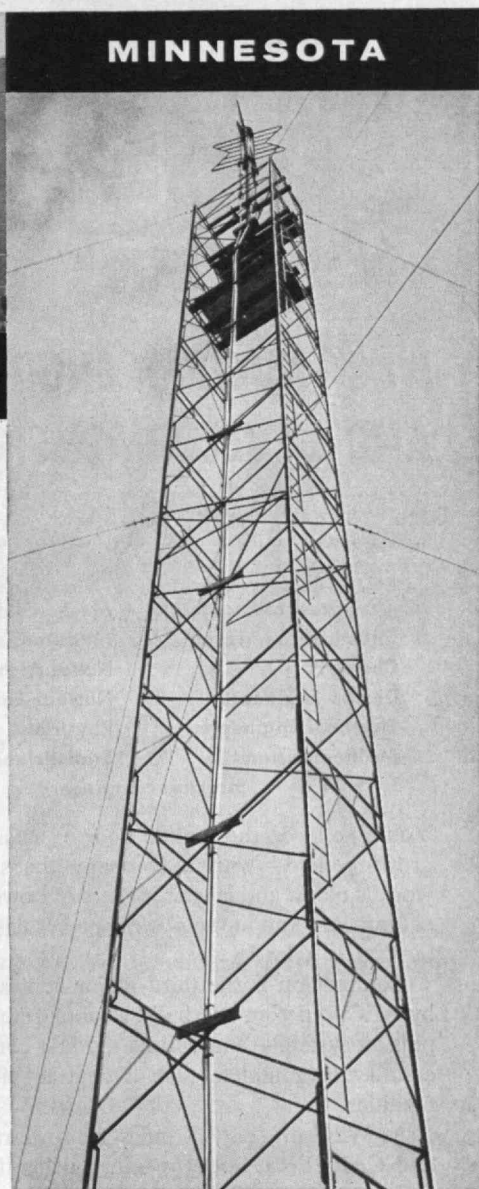
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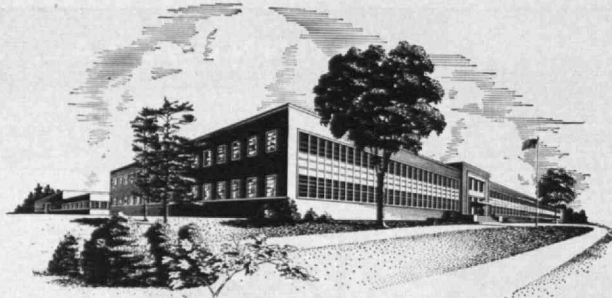


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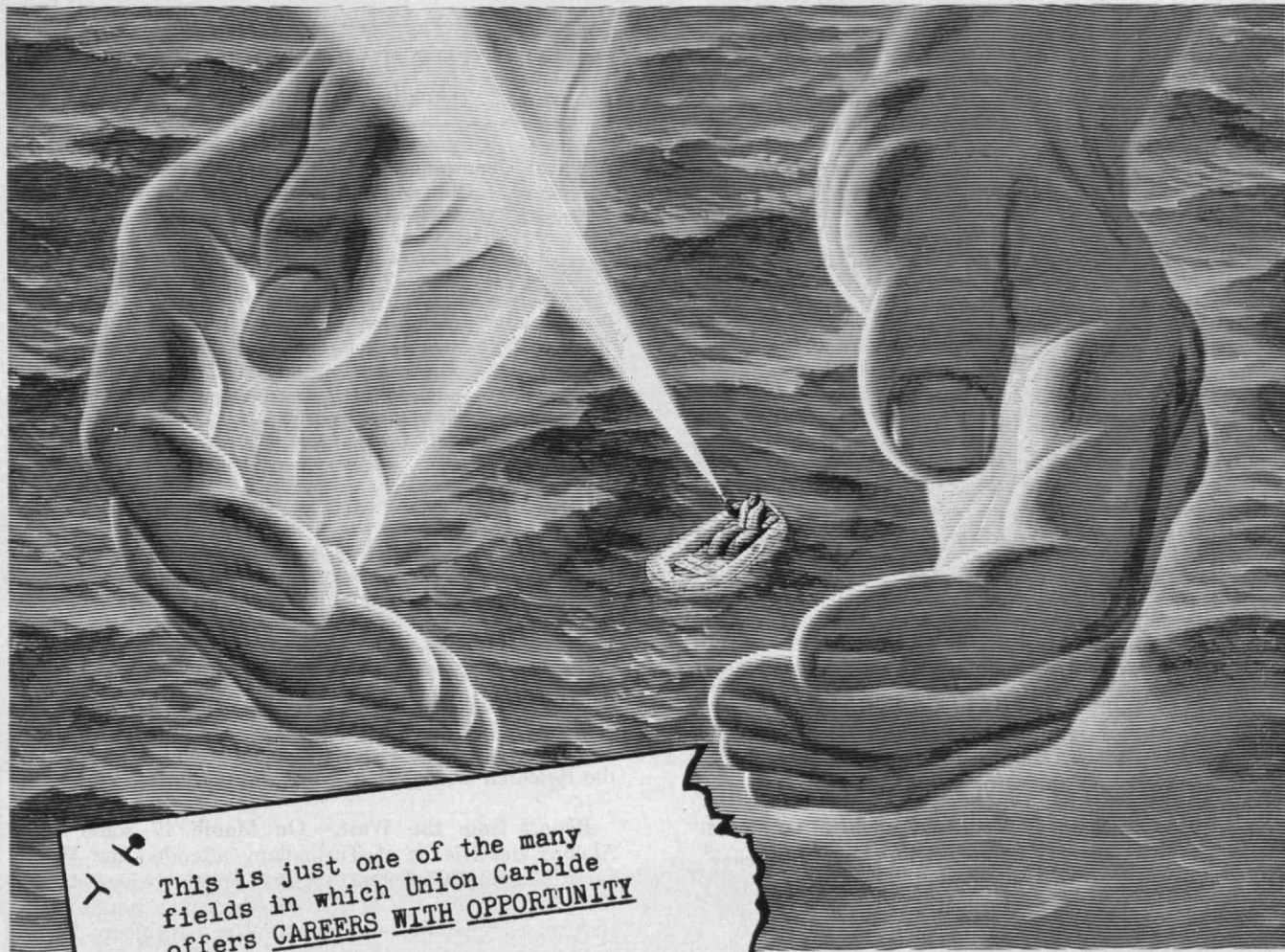
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THE TABULAR VIEW

Technical Man Power.—Currently the nation is in a period of increasing need for technical man power, coupled with a dwindling supply of properly trained and available personnel. The article "Producing More Technical Man Power" (page 341) contains a number of pertinent suggestions by CLIFFORD F. RASSWEILER to alleviate the dilemma. Dr. Rassweiler is vice-chairman of the board and vice-president of the Johns Manville Corporation, and has been affiliated with that organization since 1941. For the preceding 17 years, he was a member of the Du Pont research organization in executive posts. Born in Polo, Ill., Dr. Rassweiler received the B.S. degree in chemistry from the University of Denver in 1920, the master of science degree from the University of Illinois in 1922, and the Ph.D. degree from Illinois in 1924. The University of Denver also awarded him the Sc.D. degree in 1947. Dr. Rassweiler was at the experimental station of E. I. du Pont de Nemours and Company in Wilmington from 1924 to 1927 and then went to Du Pont's Philadelphia Laboratory where he was assistant director in 1927-1933, and director from 1933 to 1941. He became director of research and development of the Johns Manville Corporation in 1941-1942, and vice-president in charge of research and development in 1942. Dr. Rassweiler's article was originally delivered as an address at the tenth annual meeting of the Armed Forces Chemical Association in Cleveland, Ohio, last June 17, and appeared in the July-August, 1955, issue of the *Armed Forces Chemical Journal* whence it was brought to The Review's attention by Per K. Frolich, '23.

Medical Engineering?—As far as we know, no one is proposing that colleges award the degree of medical engineer. But in "Union of Medical and Engineering Education" (page 345) DR. JAMES HOWARD MEANS, '06, calls attention to the excellent science instruction now being offered by engineering colleges, which provides first-class training for those intending to follow careers in medicine. Dr. Means envisions the possibility that institutes of technology could well establish programs that would qualify students to enter medical school at about the third year. The more medicine depends upon modern scientific instruments and techniques, and the more M.D.'s engage in biophysics, biochemistry, research, and the like, the more attractive his proposal becomes. Dr. Means studied biology at M.I.T. as a member of the Class of 1906, received the A.B. degree from Harvard College in 1907, and the M.D. degree from Harvard Medical School in 1911. He was medical intern at the Massachusetts General Hospital from 1911 to 1913. He studied at the University of Copenhagen and in the Department of Physiology, Cambridge, England, and was Henry P. Walcott Fellow in Medicine at Harvard University from 1913-1916; and, during the tenure of this fellowship, established a clinical research laboratory at the Massachusetts General Hospital. He served in France with the Medical Corps in World War I, and returned to Massachusetts General Hospital. In 1923 he was appointed Jackson Professor of Clinical Medicine at Harvard and Chief of Medical Services at M.G.H. During World War II he served as chairman of the Subcommittee on Clinical Investigation of the National Research Council, and as adviser to the Office of Scientific Research and Development. Upon his retirement from the Massachusetts General Hospital and Harvard Medical School, he was appointed staff physician of the Institute's (Concluded on page 332)



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THE TABULAR VIEW (Concluded from page 330)

Medical Department. At the present time he is Jackson Professor of Clinical Medicine, Emeritus, and honorary physician, Massachusetts General Hospital.

Help Wanted. — Methods which might be used to increase the supply of technically trained man power, and also to improve the quality and quantity of teaching in science subjects in secondary schools, were discussed at the St. Louis Regional Conference on February 4 by JOSEPH W. BARKER, '16. His comments appear (page 349) under the title "Shortage of Engineers and Scientists." After a year of study at the University of Chicago, Dr. Barker came to M.I.T. where he received the S.B. degree in 1916 and the S.M. degree in 1925. In addition, he has doctorate degrees from Bucknell University, Northeastern University, Case School of Applied Science, Union College, University of Rochester, and Muhlenberg College. He was a member of the M.I.T. Department of Electrical Engineering, 1925-1929; head of the Department of Electrical Engineering at Lehigh University, 1929-1930; and dean of the Faculty of Engineering, Columbia University, 1930-1946. During World War II he served as special assistant to the Secretary of the Navy, and since 1945 has been chairman of the board and president of the Research Corporation, New York City.

Report from the West. — On March 17 some 400 Alumni and friends of Technology attended the West Coast Regional Conference at Los Angeles where a notable program of speakers outlined current progress in science, engineering, and industrial management. A report on this meeting (page 351) is provided by DAVID O. WOODBURY, '21. Mr. Woodbury received the A.B. degree from Harvard College in 1918, an A.B. degree from Leland Stanford University in 1920, and the S.B. and S.M. degrees from M.I.T. in 1921. He has also studied at the School of Journalism, Columbia University. His early professional career dealt with telephone engineering, but his interests later led him into writing science articles for newspapers and magazines. Since 1929 he has been a free-lance interpreter of science. The photographic illustrations were made by his son, Peter Woodbury.



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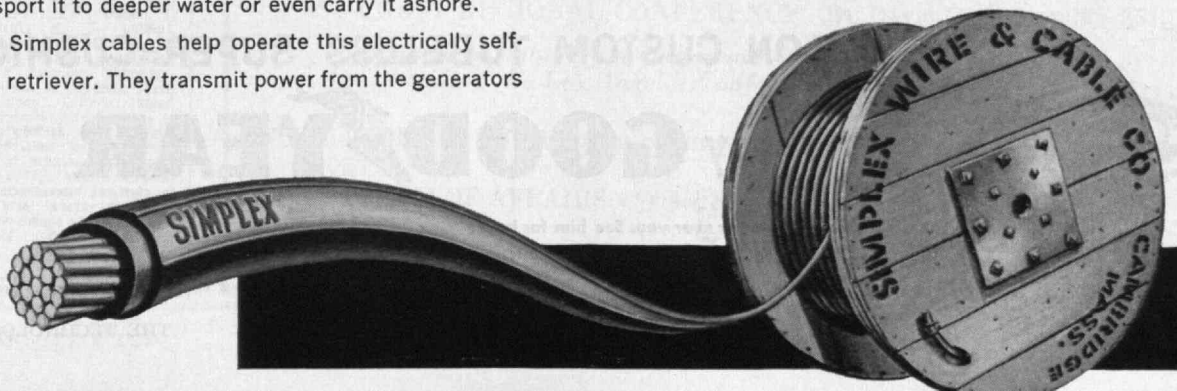
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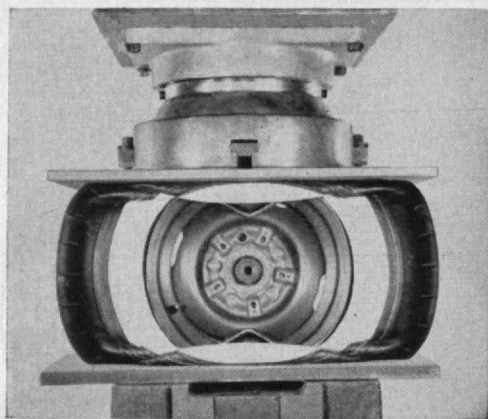
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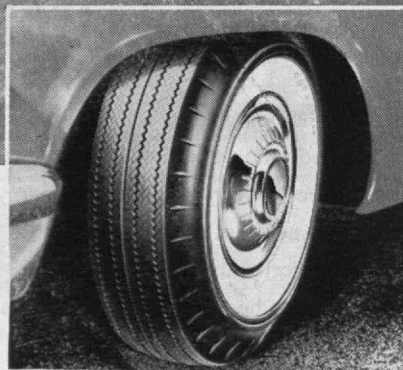


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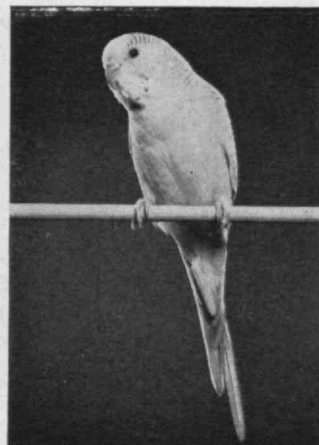


THE TECHNOLOGY REVIEW

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CONTENTS

SENTINEL O'ER WINTRY WASTES

PHOTOGRAPH BY BOEING AIRPLANE COMPANY THE COVER

PINES OF CHOCORUA

PHOTOGRAPH BY RAYMOND E. HANSON FRONTISPIECE 336

PRODUCING MORE TECHNICAL MAN POWER

BY CLIFFORD F. RASSWEILER 341

More than any other nation, the United States depends on technical man power for its way of life. This article contains suggestions for meeting critical shortage in technical man power

UNION OF MEDICAL AND ENGINEERING EDUCATION

BY JAMES H. MEANS 345

Modern engineering colleges now provide first-rate courses in science and general education. They should provide ideal training for medical students, who might enter medical school with advanced standing

SHORTAGE OF ENGINEERS AND SCIENTISTS

BY JOSEPH W. BARKER 349

Banquet address, at the St. Louis Regional Conference on February 4, outlined five possible solutions for improving training of the nation's technical man power

WEST COAST REGIONAL CONFERENCE BY DAVID O. WOODBURY 351

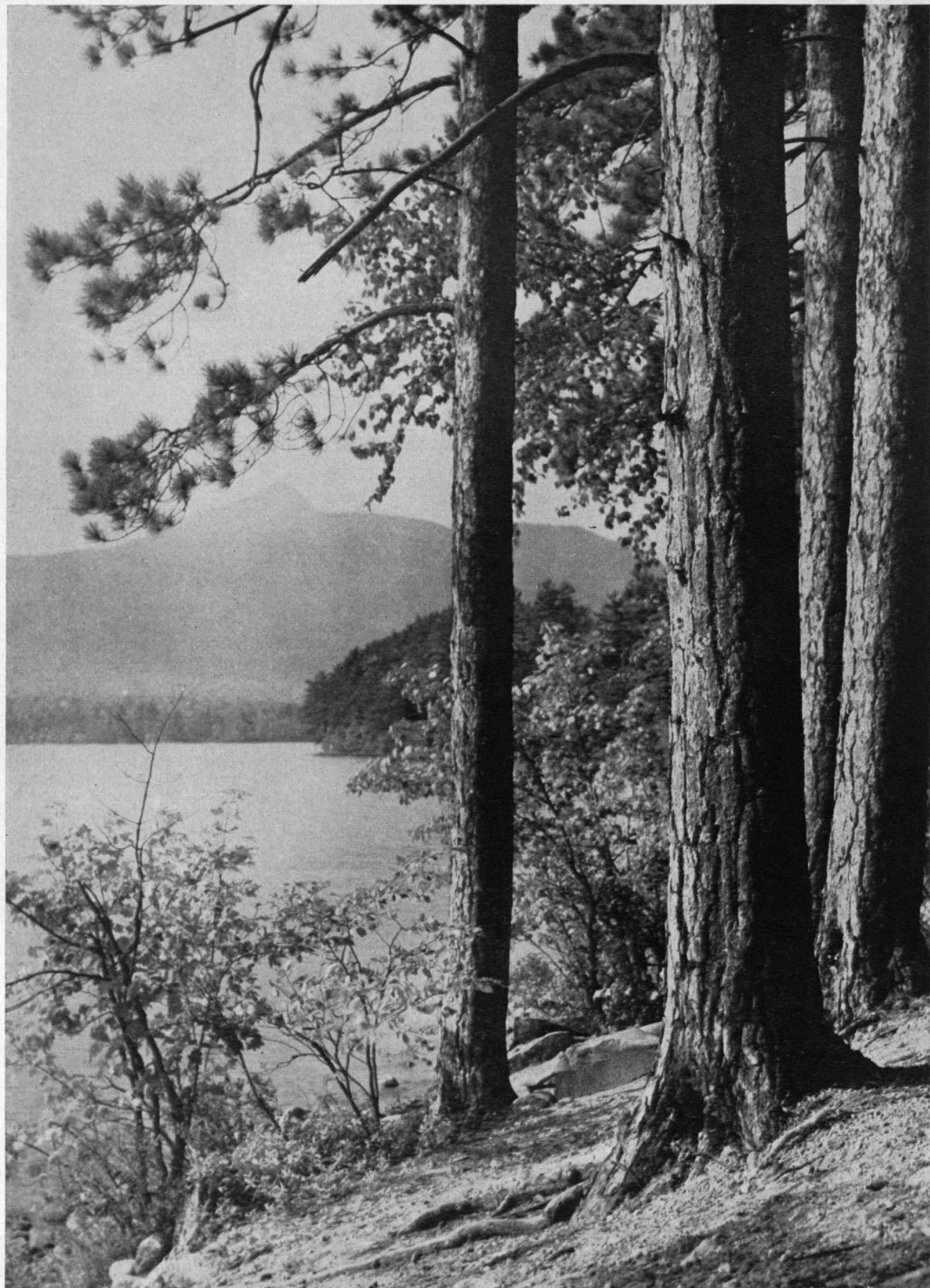
Illustrated account, by a father-and-son team, who were among 400 attending the Los Angeles Conference on March 17

THE TABULAR VIEW • Contributors and Contributions 330

THE TREND OF AFFAIRS • News of Science and Engineering 337

THE INSTITUTE GAZETTE • Relating to the Massachusetts Institute of Technology 353

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Raymond E. Hanson

New Hampshire's pines guard tree-skirted lake at Chocorua.

THE TECHNOLOGY REVIEW

Vol. 58, No. 7



May, 1956

The Trend of Affairs

Pestiferous Pets

MODERN public health is much concerned with preventing the spread of infectious diseases from man to man, but also gives attention to preventing passage of infections from animals to man. As has been pointed out in the pages of *The Review*,* a United Nations report lists no less than 86 animal diseases transmissible to man. Of these, 10 are reported to be of such major significance as to merit intensive study.

Need city dwellers be at all concerned about contracting animal diseases? As urbanites do not come near cattle, they need not worry about getting undulant fever. Unless they be equestrians who ride the bridle paths in parks, they do not come in contact with horses which might infect them with equine virus encephalitis. If they do not hunt they do not encounter rabbits or other wild rodents from which they might contract tularemia. But alas! Urban man has extensive and intensive contact with pets.

Indeed, one of the major animal diseases transmissible to man is the infection that causes parrot fever in parakeets and pneumonia in man. The gravity of this disease led some states to attempt its exclusion from their territory by forbidding the importation and sale of parakeets. Such quarantines proved ineffective because, it was found, other birds that fly freely, and have no regard for state lines, are capable of conveying the infection. Therefore parakeets are now sold and shipped freely, and these engaging little birds have gained a tremendous vogue, particularly since World War II.

But the pets with which urban folk have most contact are dogs and cats. No family home is quite complete without one or both of these animals, unless perchance they had been found to be the cause of Junior's allergies. How do dogs and cats stand as

vehicles of diseases that can strike man? These pets suffer no less than 44 diseases transmissible to the human being. Seven of these are considered to be serious, 25 less important, and 12 rare. Twenty-two of these infections are shared by the cat and the dog; 15 affect the dog alone, 7 the cat alone. Included is a broad spectrum of bacterial, viral, and protozoan infections, and infestations by parasites. Avenues of transmission are contact, swallowing, inhalation, skin abrasions, or the mediation of insects such as fleas or ticks.

What can be done about this threat to health? People will not give up pets. Even where parakeets were banned, there was a thriving black market and the birds were common. Certainly human beings, even though they benefit from the myriad products of the Twentieth Century, are not inclined to forego cats and dogs, whose companionship they have enjoyed since the dawn of civilization.

Indeed, there is no need for the abolition of pets. The spread of disease from animal to human being may be prevented the same way as the spread of disease from man to man; by effective sanitation. No matter how much an owner may love a pet, he should limit physical intimacy with the animal and wash his hands thoroughly after handling it. Young children especially need supervision in their contacts with pets; they lack the aesthetic inhibitions that help guard adults against contact with the saliva and excreta of animals. Pets should have their own eating dishes, or else the dishes should be sterilized after use. Pets should be kept free of fleas and ticks that might convey infection. Animals should not be allowed to defile beaches or other areas where people go barefoot, as at least one important animal intestinal parasite enters the human body through the foot. Thus, although they are potentially pestilential, feline and canine pets may be enjoyed with impunity by man so long as owners observe a sensible degree of sanitation.

* "Animals Versus Man," *The Technology Review* 56:390 (June, 1954).

Highway Bridge Vibration

THE movement of traffic across highway bridges induces vibrations which are important for two reasons: (1) the stresses in the structure are increased above the normal static values, and (2) persons on the bridge may find the vibration objectionable. The first effect is, of course, dangerous since excessive vibrations may impair the safety of the bridge. The second effect, while perhaps not dangerous, is important since it may result in public distrust of the structure.

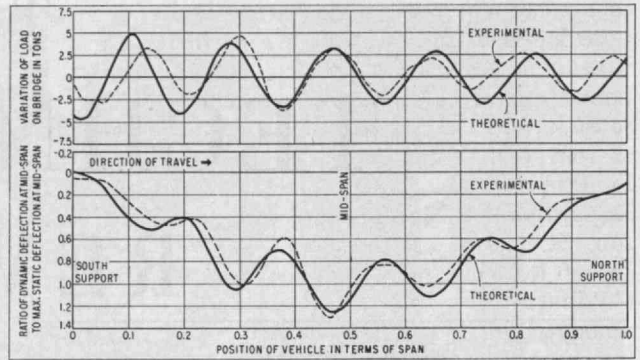
Although bridge engineers have recognized this problem they have not had available the theoretical means to predict accurately the dynamic behavior of bridges. As a result, bridges have been constructed which proved to be unsatisfactory. In other cases, engineers have discarded what would have been economical designs because of an unwarranted fear of excessive vibrations. Bridge engineering design would be considerably advanced by a theoretical procedure that would permit bridge vibration to be predicted with accuracy.

During the past two years the Structural Division of the Department of Civil and Sanitary Engineering has been conducting research on the subject. Early exploratory field tests indicated that the dynamic behavior of the vehicle itself was of primary importance in highway bridge vibration. This behavior is largely determined by the character of the roadway surface. It was further indicated that, in most cases, surface roughness on the approaches to the bridge contributed more to the vibration than did irregularities on the structure itself.

A method of analysis has been developed which includes the dynamic characteristics of the vehicle as well as those of the bridge. The method was verified by carefully controlled laboratory tests on bridge models.

A series of field tests recently completed permitted a comparison of the theoretical results with the behavior of actual structures. These tests, which were made on typical highway bridges having spans of about 90 feet, involved the measurement of the dynamic bridge deflection due to the passage of a 20-ton vehicle at various speeds. The vehicle itself was instrumented and continuous records were obtained by a portable oscillograph mounted in the vehicle. The measurements taken were the bending strain in the axle and the vertical acceleration of the axle mass. By proper combination of these readings, the actual force applied to the bridge could be obtained at any time. The mid-span deflection of the bridge was recorded simultaneously.

Typical experimental results are shown in the illustration. The upper curve shows the variation in the force applied to the structure by the vehicle as it crossed the span. The lower curve shows the bridge deflection during the same period of time. Also shown in the illustration are theoretical results based upon an assumed initial vibration of the vehicle on its own springs, which is determined by the roughness of the approach roadway. The differences between the theoretical and experimental curves of load variation are of secondary importance and are due primarily



Comparison of theoretical and experimental mid-span deflections of Townsend Main Street bridge. Bridge has span of 88.67 feet and static deflection of 0.162 inch. Vehicle producing vibrations shown above was 20-ton truck traveling at 37 feet per second.

to surface roughness on the bridge, which was not considered in the theoretical computations. The two curves of bridge deflection are in close agreement.

The experimental results indicate that the theory provides an accurate method for the prediction of bridge vibrations. Theoretical data are now being obtained by analogue computer for vehicles of various characteristics and bridges of various types of spans. When completed, this data can be applied directly to the design of highway bridges.

This project is under the direction of John M. Biggs, '41, Associate Professor of Structural Engineering, and is being conducted with the co-operation of the Department of Public Works of the Commonwealth of Massachusetts.

Radiation Recapitulation

IONIZING radiation, useful to mankind ever since Roentgen discovered the x-ray, has been finding application of an ever-accelerating rate since the advent of nuclear fission. Thoroughly established uses of ionizing radiation are in the diagnosis and treatment of disease, tracer studies in biochemistry employing radioactive elements, the forcing of mutations, elimination of static electricity, detection of flaws and foreign materials, gauging of thickness, location of leaks, and studies of friction and lubrication.

Still in a developmental stage but showing much promise of ultimate practical value, is the preservation of foods by means of ionizing radiation. Pioneer work in this area, done at the Institute by the Department of Food Technology co-operating with the Department of Electrical Engineering, revealed that foods in sealed containers may be sterilized by irradiation, with only negligible increases in temperature. Thus is accomplished indefinite preservation of the foods, without the particular adverse changes in flavor, color, and texture resulting from the high temperatures required for heat sterilization, as in canning. Radiation sterilization of foods has indeed been called "the first new basic method of food preservation since Appert's discovery of canning."

Ionizing radiation has also been found capable of extending the storage life of non-sterile foods, such as meats and vegetables held under refrigeration but not frozen. Thus a recent publication from the Institute's Department of Food Technology announces

that treatment with high-voltage cathode rays, at dose levels in the order of 1.0×10^6 or 1.5×10^6 Roentgen equivalent physical, considerably postponed spoilage of spinach, fresh pork sausage links, sausage patties, ground beef, and frankfurters held at refrigeration temperatures. This work was done by Professor Bernard E. Proctor, '23 (Head of the Department of Food Technology), John T. R. Nickerson, '32 (Associate Professor of Food Processing), Joseph J. Licciardello (technical assistant), Samuel A. Goldblith, '40 (Associate Professor of Food Technology), and Ernest E. Lockhart, '34 (Associate Professor of Food Technology), who acknowledge the co-operation of Professor John G. Trump, '33, of the Department of Electrical Engineering, and Kenneth A. Wright, '47, of the Division of Industrial Cooperation, in making available the Van de Graaff accelerator for production of the radiation employed and also for providing counsel on the research.

Commercial use of ionizing radiation in the processing of foods must await general availability of the needed equipment, categorical proof of harmlessness to the consumer, and elimination of certain changes, such as off-flavors, caused by the irradiation. The group at the Institute found that addition of harmless salts such as sodium ascorbate, sodium fumarate, and monosodium glutamate served to obviate the characteristic irradiation off-flavors. Frank J. McArdle and Norman W. Desrosier, at Purdue University, have announced methods for determining molecular changes in proteins of foods caused by irradiation; and employing these methods have observed that such undesirable changes may be minimized by adding ascorbic acid before irradiation.

Thus developments in the food field are serving to broaden biological application of ionizing radiation. A quite novel biological use of radiation has just been announced; extermination of an insect pest. This method has made possible the total eradication from the West Indian island of Curacao of a serious livestock pest, the screwworm fly. This insect lays eggs in open wounds of cattle. The hatched larvae feed upon the exposed flesh, causing agonizing pain, sometimes even destroying the cattle.

It is known that the female screwworm fly mates but once. Hence any female that mates with a sterile male never produces young. On the basis of this knowledge, the island of Curacao was saturated with laboratory reared male flies made sterile by exposure to ionizing radiation. By trial and error it was determined that a release rate of 400 sterile males per week per square mile served to completely prevent reproduction by this fly. In this way the pest was completely eliminated from the island.

The screwworm fly is a serious pest of livestock in the United States, particularly in the warmer southern areas. Its elimination by irradiation sterilization of males would be much more difficult here, because this country is not a small and isolated area like the island of Curacao. Nevertheless it appears that ionizing radiation has developed one more biological application of utility to mankind, that may in small measure counterbalance the terrible threat of radiation damage from atomic war, and also the danger of human genetic damage from the ever-mounting background radiation now arising from many sources.

More Oil: Less Water

MANY oil wells are "submarginal" in the sense that income from oil royalties is insufficient to support cost of operation and yield a satisfactory return on the investment required to drill and operate the well. For such wells, a minor stimulation of production will often make the difference between economical and uneconomical operation and will allow production of oil which, under normal circumstances, would be left underground. It is very much worthwhile, therefore, to explore those techniques that promise improved rates of petroleum production.

In the primary recovery of petroleum from water-drive reservoirs, and in secondary recovery from water-flood projects, the efficiency of oil production is often greatly reduced by the premature intrusion of water into the oil-bearing stratum, so that wells produce water and oil simultaneously in varying degrees. Frequently loss of oil production appears to be caused by encroachment of water into the oil-bearing stratum immediately below the well. As a result of pumping oil to the surface, low pressure near the well-bore is accompanied by a rise in the water table at the well-point. As shown in Fig. 1 (page 340), the water table assumes a characteristic conical shape, with its apex at the well-bore. In addition, capillarity causes the water cone to rise to a higher level than that predicted by simple hydrodynamic considerations. There appears to be promise of increasing oil productivity if economical means for alleviating water-coning can be achieved by altering the properties of the formation surrounding the well-bore.

Studies indicate that the forces required to suppress the water cone are small. If it should be economically feasible to prevent formation of the water cone, or to substantially reduce the extent of its rise, enhanced oil productivity might be expected to result. Research recently conducted at the Institute has been directed to exploring the possibilities of minimizing or eliminating water-coning by chemical treatment of the formation adjacent to the well-bore, in order to alter the capillary forces acting at the oil-water interface, as shown in Fig. 2. The research has been conducted by Alan S. Michaels, 2-44, Assistant Professor of Chemical Engineering and Associate Director, Soil Stabilization Laboratory, with the assistance of two former students of M.I.T. — Richard I. Bergman, '55, and Daniel L. Brown, '55 — the latter of whom is at present at the Institute in the Soil Stabilization Laboratory.

Basically the idea behind the Institute's research is to inject into the well-bore a relatively small quantity of a treating agent which adsorbs firmly on the formation surface around the well-bore and which changes the oil-water-solid contact angle so that oil, rather than water, wets the surface around the well-bore. By such a technique, oil, rather than water, wets the surface in what has been called "reverse wetting" of the porous formation.

A laboratory apparatus, consisting of a cylinder of 20-40 mesh Ottawa sand to which oil (kerosene) and water were fed peripherally and from the center of which the fluids could be withdrawn at a controlled rate via an axially located perforated tube, was used for this study. The oil-to-water ratio in the produced

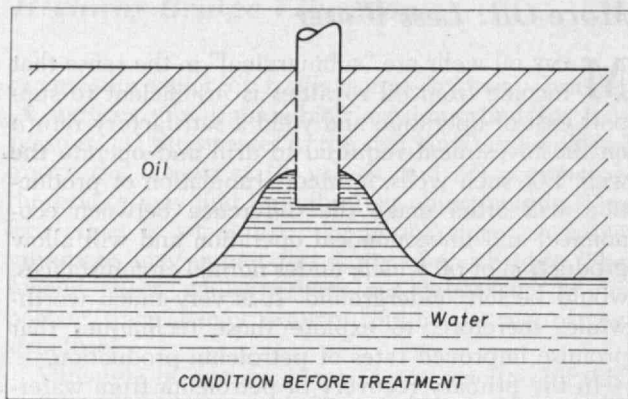


Fig. 1. Naturally occurring water cone, at oil-water surface near well-bore, allows water to be pumped along with oil.

fluid was measured as a function of flow rate and location of the oil-water horizon in the cylinder, with the sand untreated (that is, water-wet). Small quantities of dilute (50 parts per million) aqueous solutions of two reverse-wetting additives (octadecyl amine acetate, and dioctadecyl dimethyl ammonium chloride) were then forced out into the sand via the perforated tube, and the oil-water ratio redetermined at varying flow rates and interface locations. It was found that, under conditions where prior to formation treatment no oil was delivered, treatment with these additives resulted in the production of fluid

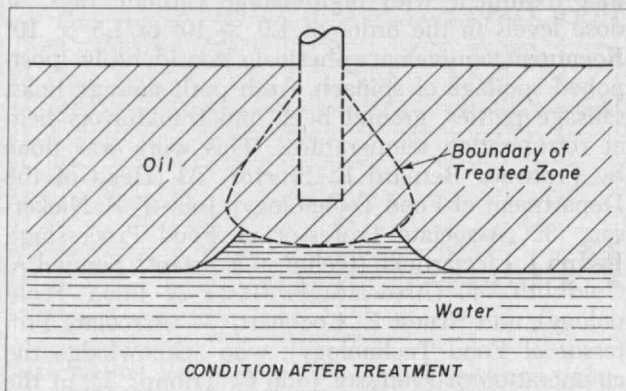


Fig. 2. Reduced water cone, after treatment with reverse-wetting additives, increases rate of oil production.

containing as much as 67 per cent oil, the oil-to-water ratio decreasing with increasing flow rate. Under conditions where, prior to treatment, the produced fluid contained 24 per cent oil, after treatment as much as 100 per cent oil was delivered.

The results of this study suggest that, for very highly permeable, sandy formations, treatment of coned-out wells by injection of dilute aqueous solutions of reverse-wetting additives, in sufficient quantity to alter the capillary forces in the vicinity of the well-bore, may be useful in preventing or minimizing water-intrusion by coning.

Cultural Achievement

WHEN Louis Pasteur established the modern science of microbiology during the latter half of the Nineteenth Century, one of his most fundamental contributions was the development of methods for growing micro-organisms in pure culture. In nature, all forms of life exist in heterogeneous mixtures; this is especially true of bacteria, molds, yeasts, and such microscopic forms. Manifestly, it is difficult to study microbes as members of complex and variable mixed populations. Pasteur overcame this obstacle by developing methods whereby a given strain of micro-organism could be isolated from all others, and studied in pure culture.

Pasteur's methods for establishing pure cultures had one serious shortcoming that has since been overcome. He proceeded on the assumption that "colonies" of micro-organisms, grown on solid nutrient media, represented pure strains. It was subsequently learned that, as a result of genetic variations of micro-organisms that arise from time to time through mutation, a colony may include several somewhat different, if closely related, strains. This observation led to development of means for starting pure cultures of microbes from single cells. Isolation of single cells for this purpose is accomplished by extraordinarily delicate micromanipulation apparatus, capable of grasping a single microbe despite its minute size, generally in the order of a few microns in diameter.

Methods for maintaining micro-organisms in pure culture for study purposes are the basis of much of modern medicine, public health, food technology, and the fermentation industries. It is startling to

learn that this great scientific accomplishment of man has long been within the powers of certain species of ants. These insects maintain fungus gardens in their nests as a source of food. The substrate on which the gardens grow consists of leaves that the ants have gathered and triturated into small particles. Only a particular species of fungus is acceptable to the ants as food; and their fungus gardens represent as pure and unmixed a growth of this fungus as any meticulously maintained modern laboratory culture. The fungus has never been observed anywhere but in the ants' nests. Purity of the ants' cultures depends entirely upon the animals' presence; if they are removed from their nests, their fungus gardens are quickly invaded and overgrown by fungi of other species and by bacteria. Conversely, if the fungus on which the ants feed is established in the laboratory on a culture medium, and this growth then surrounded with colonies of bacteria and of alien fungi, ants placed upon this culture will maintain their favorite fungus in pure and flourishing form, even though they clamber over the bacteria and the other fungi in their peregrinations about the culture plate.

How do the ants accomplish this extraordinary feat of maintaining their cherished food fungus in pure culture despite all sorts of adversity? Apparently some form of antibiosis is involved; some chemical substance may be present that prevents growth of all micro-organisms except the desired one. The nature of such an antibiotic and a possible source are unknown, although it has been postulated that the digestive tract of the ants may generate the material. Thus the pure culture methods of ants probably differ fundamentally from those employed by human microbiologists.

**More Than Any Other Nation, the United States Depends on
Scientists and Engineers to Maintain Its Way of Living.
Here Are Some Suggestions for**

Producing More Technical Man Power

By CLIFFORD F. RASSWEILER

So much has been written and said about the shortage of scientific and engineering man power that it seems superfluous to start this talk by presenting any figures to substantiate the conclusion that there is serious need for active measures to increase the production of such technical personnel.

So far as industrial needs are concerned, almost everyone here must be personally conscious of the impossibility of hiring enough technical man power this year to provide for the needed research and engineering activities which are essential for maximum industrial progress. As regards our situation versus Russia's, the most commonly quoted and accepted figures are that our annual need for new engineers lies between 30,000 and 40,000. Against this need we produced 50,000 in 1950 without any evidence of surplus, but our production since has dropped annually until this year we will graduate only approximately 22,000 engineers. In the meantime, in 1955, Russia had reached an annual production of 40,000 engineers by intensive development of scientific and engineering schools and concentration on the teaching of mathematics and science in the secondary schools. There is every evidence that a large percentage of these men have been well trained by Russia's educational system.

However, there are no really adequate figures regarding the total number of available scientists and engineers in comparison with industry and teaching demands, and attempting to forecast in this area is difficult. As late as 1949, a government publication on occupational opportunities predicted an oversupply of engineers and rated attractiveness of engineering careers at a rather low level. There is a very considerable tendency to think of our present shortage of technical man power as a short-time problem involving the discouraging government forecast, the low birth rate of the 1930's, excessively high industrial demand due to boom conditions, and the drain of military needs upon available supply.

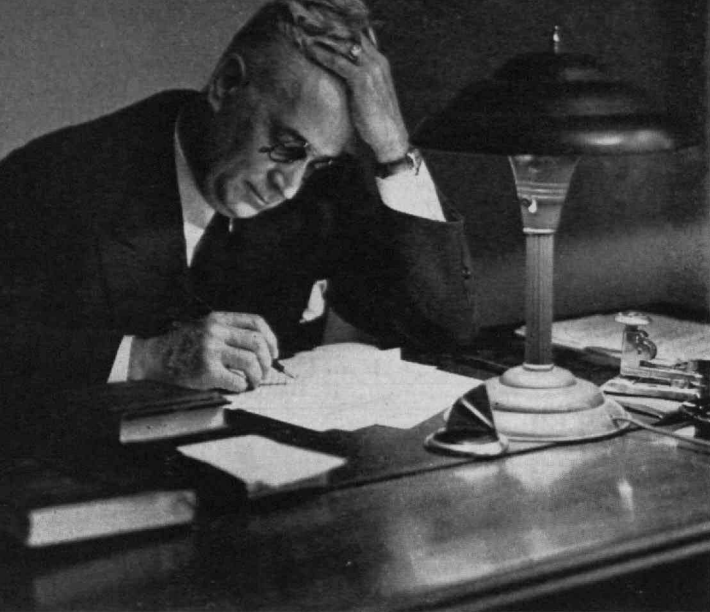
On the other hand, there is considerable justification for the belief that our present critical situation is at least partly due to long-range educational and economic trends, which are not likely to be reversed in the foreseeable future. The shortage of technical man power has now been with us for almost 15 years. We blamed it first on draft policies during World War I and the failure to continue training technical people during the war years. Yet the great upsurge in college enrollment which followed the end of the

war did not fill up the deficiency in technical man power which had grown so sharply during the war. Now we are tending to blame the continuing shortage on low college enrollments due to the low birth rates of the 1930's. All of the factors referred to in these explanations of course have an important effect upon our situation; but behind them lie certain long-range changes in our educational and economic situation which may be more basic causes for our difficulty. It is about the effect of these situations on our technical man-power supply that I would like to speak here.

Dael Wolfe, Director of the Commission on Human Resources and Advanced Training, in his book *America's Resources of Specialized Talent*^{*} gives some interesting figures on the percentage of four-year college graduates who have specialized in different fields in terms of averages for five-year periods since 1900. These figures show that, during a period in which science and engineering have come to be of increasing importance in our industrial economy and our national defense, there has not been a corresponding increase in the interest of college students in these subjects.

Specialization of college students in chemistry, physical science, and mathematics, which provide the background training for our industrial research progress, reached its maximum in the 1911-1915 period when 8.9 per cent of the four-year degrees awarded in the United States were in these specialties. Since that time the interest of college students in these subjects has decreased in an almost even trend, until in the 1951-1953 period only 4.4 per cent of the degrees granted were in these specialized fields. During this period, expenditures for physical research in this country grew from less than 100 million dollars per year to approximately four billion dollars per year. Yet during the period of this phenomenal growth in this activity, interest of college students in preparing for this type of work, or for teaching to prepare others for this type of work, has dropped 50 per cent. The reports of the Office of Education, now a part of the United States Department of Health, Education and Welfare, on "Earned Degrees Conferred by Higher Educational Institutions" give us detailed figures on an annual basis since 1949. These figures show that during this period the percentage of degrees awarded in the physical sciences has continued its slow decrease.

^{*} New York: Harper and Brothers, 1954.



Harold M. Lambert

It is the scientist who spends his evenings reading scientific literature. . .

It is interesting that during this same period, from 1911 to the present, the percentage of four-year degrees awarded for specialization in the fields of social science and psychology has increased from 7 per cent to 13.2 per cent. In other words, during a period in which we have been disturbed by the thought that preoccupation with physical science was draining off the best of our college brains, what has actually happened is that interest in physical sciences has been cut in half, whereas interest on the part of college students in social sciences has doubled.

The figures on engineering do not show as clean-cut a trend as the figures on physical sciences. In the period of 1916-1925, covering World War I and its postwar adjustments, the percentage of four-year degrees awarded for specialization in engineering averaged 9.7 per cent. In the corresponding period from



H. Armstrong Roberts

It is the highly trained engineer who takes a brief case full of blueprints home to work on over the week end. . .

1941-1950, the percentage was 10.1 per cent. In the intervening years, the percentage of degrees which were awarded to engineers lay between 7 per cent and 8 per cent. It would appear, therefore, that the interest of our college population in engineering subjects has shown practically no increase during a period in which our industries have been converted largely to mechanized production, and during which we have seen spectacular increases in the importance of the electrical, the automotive, and the aviation industries based largely on engineering effort. The more recent trend, however, is shown most clearly by some figures in Dael Wolfe's book showing the percentage of four-year degrees granted to male graduates since 1947 which have been for specialization in engineering subjects. His figures show that from 1947-1953 the percentage has dropped in every year, making a relatively smooth trend line from 18 per cent in 1947 to 12 per cent in 1953. The bulge of 1950 in engineering degrees awarded was the result of high total graduation, not of increased interest in engineering. The detailed report of the Office of Education gives the further interesting information that this decrease in interest in engineering subjects has been sharpest in the fields of aeronautical, electrical, and mechanical engineering, where one might have expected the interest to have been greatest. In each of these three fields, percentage of degrees awarded has dropped more than 50 per cent since 1949.

It is obvious that we have been saved from what might almost be a catastrophe by the fact that the decreasing percentage of interest in physical sciences and engineering on the part of our college population has been compensated by the great rise in over-all college attendance. We are now in a particularly critical situation, because a simultaneous decline has been occurring during the last three years both in interest in these subjects and in total over-all college enrollment. It is possible that all we have to do is to struggle through to the point where total college enrollments will expand again as a result of the high birth rates of the 1940's. But the extent to which interest in science and engineering has failed to keep pace with its growing importance in our industrial civilization is too serious to be passed over without careful study.

There is a growing realization that the root of our trouble lies in long-range changes which have taken place in high school education. Both decreasing interest in technical subjects and inadequate production of technical man power start with situations now facing our young people when they first enter senior high school.

There will always be a certain percentage of students entering high school who know definitely that they are going to college and even that they are definitely going to become scientists or engineers. Students with such definite convictions, almost regardless of where they live, can secure high school training which will qualify them for college admission and eventually for college degrees in their chosen specialties.

However, the young people with whom we are concerned are those who enter high school without any definite conclusion as to what profession they in-

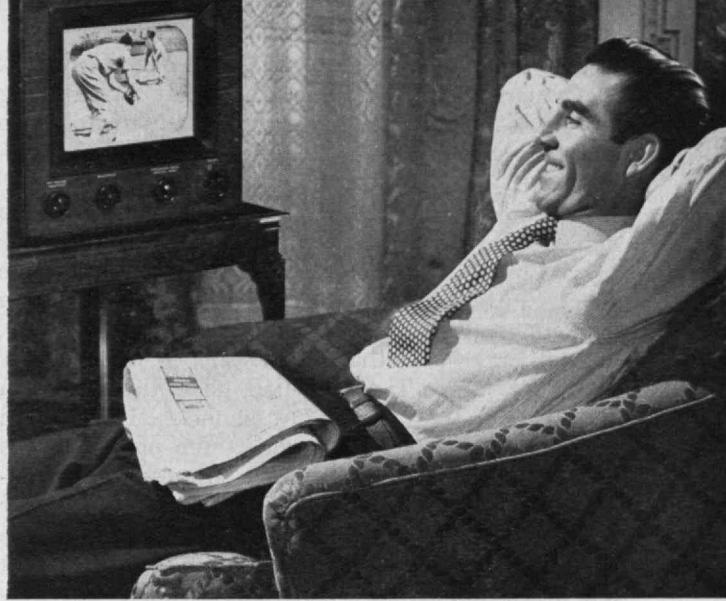
tend to eventually follow, and even without any definite fixed decision as to whether they do or do not intend to take a college education. Among these are many young men who could become scientists or engineers but who also might become salesmen, ministers, or skilled mechanics. Our difficulty stems partly from the fact that the unconscious pressures to which they are subjected by our present high school educational system tend to turn them away from science and engineering, even though these might be very satisfactory professions to enter.

When a young man enters high school, his obvious primary objective is to get a high school graduation certificate. If he is intelligent and aggressive, he has a secondary objective of wanting to make a good scholastic average while doing so. If he definitely wants to go on to college, it becomes vitally important that this scholastic average be in the upper quarter or upper 10 per cent of the class if he is to get into the college of his choice. Also, he has the natural objective of wanting to take part in at least a reasonable amount of extracurricular activities; and the more intelligent he and his parents are about his eventual development, the more likely he is to feel impelled toward establishing some such suitable balance. Also, being a natural human being, he sees no reason why he should work any harder than necessary to achieve these objectives.

In order to achieve these generalized objectives, a student quickly finds that it is expedient to avoid science and mathematics as far as possible. This is particularly true for the earnest student striving to make high scholastic averages, unless he happens to be that rare creature who has mathematical aptitude. Avoiding science and mathematics is an almost inevitable decision for the student who is trying to find the easy way to get a high school certificate or to get into a college of his preference.

If you have any question about this, ask your teenage children or the children of some of your friends what are the "snap," or more colloquially called "gut," courses in their high schools or colleges. You will not find algebra, geometry, calculus, chemistry, and physics included. In the old days, where the curriculum demanded courses which taught exact and disciplined thinking, the students were forced to take a considerable amount of this type of work. Now, however, with the liberal choice of studies and relaxed college requirements, the easiest way to get through high school and into college is to avoid as many of these subjects as possible. As a result, an increasing number of students entering college do not have the high school training necessary to qualify them for major work in science or engineering. In fact, college advisers say that it is very common to ask a student whether he would be interested in majoring in chemistry or physics, and find that he has no conception as to what the adviser is talking about.

This avoidance of disciplinary subjects in our high schools is not simply a matter of laziness. Actually, our present high school practices strongly tempt our most ambitious and intellectual students to avoid such subjects. We place a great deal of importance upon grades. Our more selective colleges are only



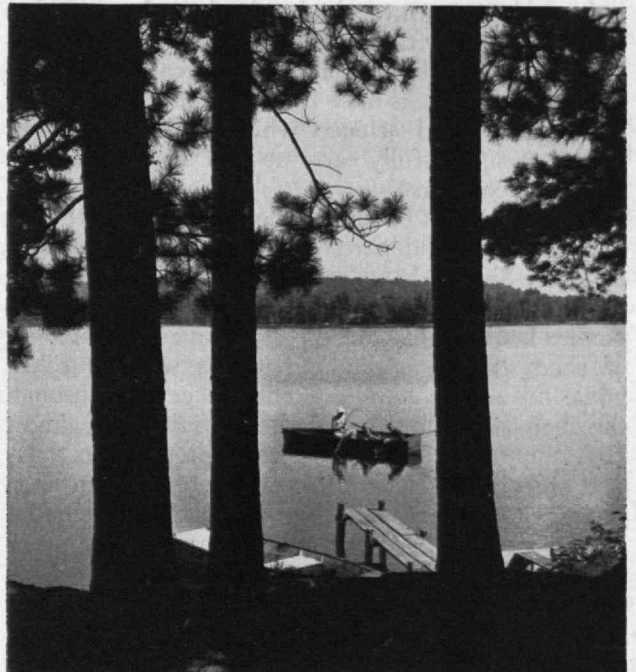
A. Devaney, Inc., N.Y.

... the skilled mechanic, next door, spends his evenings watching television programs.

interested in the high school students who have graduated with the highest scholastic averages. There is a very great temptation for the scholastically ambitious student to avoid those courses which he knows are most difficult in order to boost his scholastic average. I know it is true that the standard practice in each course is to adjust the grades so as to give the same distribution between A's and B's in calculus as are given in art appreciation, but any student knows that the mental caliber of the students in the calculus class represents tougher competition than the average mental caliber of the students in the art appreciation course.

To point up the seriousness of this situation, let me give you a few specific examples.

Through my sons, I have followed the development of a young man of excellent mental ability who



H. Armstrong Roberts

... the worker, whose responsibilities end when he punches the clock on his way out, spends his week ends at a lake.

is now a student at one of the Ivy League colleges. In preparatory school he had his heart set on going to one of the Ivy League colleges, but to do so he had to have the financial assistance of a scholarship. I know that throughout his preparatory school course he carefully selected, as far as possible, only those subjects in which he thought he had the best chance of getting the highest possible grades. He got the scholarship, but studied only the absolute minimum of mathematics and science in his preparatory work.

Another case is that of the son of an engineer friend of mine. The boy had gone through high school intending to be an engineer. He was in friendly scholastic rivalry with three of his friends who were going to specialize in business administration. His particular high school offered two senior courses in mathematics: one a special intensive course for prospective engineers, and the other a much easier and more generalized course for prospective liberal arts students. He took the engineering course; his friends took the generalized course. There was no question about his being a better mathematician than his friends; but, due to the greater competition in the specialized course, he got a *B* whereas his friends got *A*'s. They graduated *cum laude* as a result and he did not. All four of them are now studying business administration.

One of the best of our smaller strictly liberal arts colleges requires two years of a generalized science course for graduation. The course is divided into two sections: one is a specialized course for science majors, and the other a generalized course adjusted to represent the minimum of scientific knowledge which they feel a liberal arts graduate should have. A few years ago they had a near rebellion among the students in the generalized course. They threatened to go on a strike because the work was too difficult and too many of them were failing. All this happened in a college which accepts for entrance only students with top high school grades. I understand unofficially that now this school, before admitting students, goes beyond their generalized scholastic average to make sure that they have a record in mathematics and science which will insure their ability to successfully carry at least a minimum college science course.

Recently I was talking to the assistant head of the home economics department in one of the teachers' colleges. She said the college was having difficulty in getting girls who will specialize in home economics because the course includes a certain amount of chemistry. In addition, students who do select home economics have difficulty in getting through the chemistry course largely because they are almost all highly deficient in mathematics preparation.

It would be highly unfair, however, to our young men to imply that their decisions to avoid mathematics and science are based entirely upon what is easy or expedient. If you talk to students in high schools or colleges, you will be impressed by the fact that their selection of courses is greatly affected by their opinion of the teachers giving the course. The kind of intelligent, ambitious people we need in science and engineering are very likely to choose a tough course if they feel the teacher is interesting or particularly

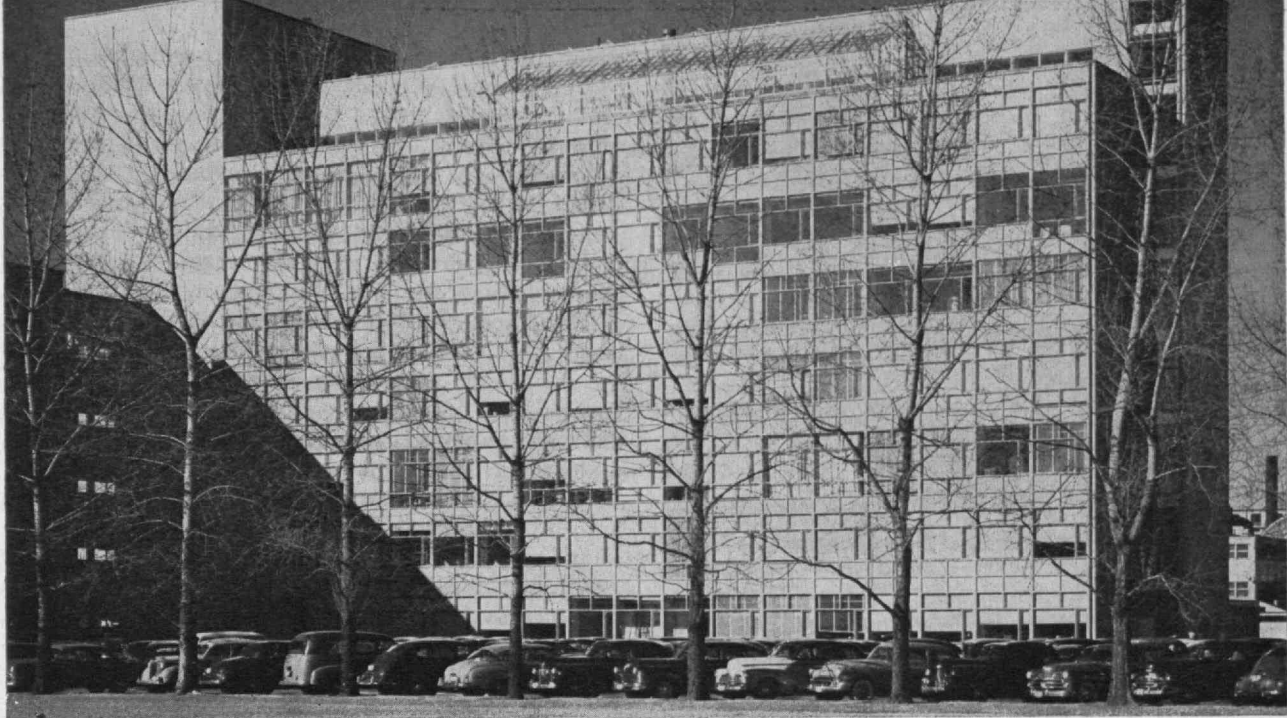
good. There is justification, therefore, for believing that the greatest difficulty with our high school situation is the steady long-range deterioration in the caliber of the teaching of science and mathematics in the secondary schools due to the difficulty of getting and keeping adequately trained teachers of science and mathematics. If our high schools were adequately staffed with teachers who had a sound training for science — and the personality to make students see the fascination which science and mathematics can have for an educated mind — we would not have to worry about the fact that other pressures were tending to drive even our ambitious and intelligent students away from these courses.

The difficulty of keeping the high schools supplied with properly trained science and mathematics teachers is the inevitable result of a long-range economic trend which there seems little likelihood of reversing. A man who would meet the specifications of a really capable and inspiring high school teacher of science also exactly fits the urgent needs of our scientist-hungry industrial machine. There is a very wide differential, salary-wise, between the industrial opportunity and the teaching job. There is no reasonable possibility of either reducing the financial attractiveness of the industrial job or of raising the financial inducement of the teaching job to match that of the industrial position. School boards are almost unanimous in feeling that they cannot possibly pay the science teachers more than they pay their other teachers with university degrees. With the growing problem of providing schools for the mounting student population, there seems no reasonable likelihood that school taxes can be raised to the point where *all* high school teachers can be paid salaries comparable to what industry is paying graduate scientists. The high schools cannot pay a qualified graduate scientist any more than they feel justified in paying a young woman seeking a three-year or four-year job before she gets married. Therefore there seems little practical likelihood of solving our high school science problem by a radical and overall improvement of the caliber of the people teaching science in the high schools.

There will always be some splendid science teachers in our high schools and one must speak words of praise for the industrial companies and other organizations who are trying to make the lot of these high school teachers of science more attractive by summer jobs, plant visits, and a variety of other efforts. However, as long as the major economic incentive draws scientific men to industry instead of to the secondary schools, we can only expect a worsening of the present situation where more and more science and mathematics courses are being taught by people with no specialized training in these subjects.

There are, however, three things which it should be practical to do and which should go far toward solving the problem of creating, in our high schools, a situation where a proper number of qualified students become interested in and prepared for scientific and engineering careers. Fortunately, all three of these things can be done by industry without getting involved in local school board politics or raising

(Continued on page 370)



M.I.T. Photo

In addition to the general science subjects, with major emphasis on physics and chemistry, students desiring to follow careers in medicine may receive thorough training in the life sciences in M.I.T.'s Dorrance Laboratory of Biology and Food Technology.

Union of Medical and Engineering Education

By JAMES HOWARD MEANS

DURING my entire professional life I have participated, one way or another, in the educational process of medicine. Now, in the five years I have been at M.I.T., I have also had the opportunity there to observe from the sidelines, some of the features of the education of the engineer. Certain indications and requisites common to the two have impressed me, and I believe the identification of these, and the relation of each to the other, may increase our understanding of both.

First, I submit that neither medicine nor engineering is a science in its own right. Both are professional callings with definite practical objectives to reach which will make use of any knowledge, method, or facility, whether scientific or other, that helps to serve their ultimate purpose. Both the engineer and the physician must rest his practice on a strong foundation of scientific fact and theory. In the application of these to vital human needs, however, both must gain understanding of human behavior and its motivations, not only in the individual, but as reflected in the community as well. Finally, in order that the professional person may be able to circulate freely among, and communicate with, intelligent and well-educated people, it is imperative that he himself have the benefit of at least a modicum of good general education.

The personal qualities of detachment, the ability to make value judgments with integrity, to reach wise

decisions, and to carry through, responsibly, courses of action derived therefrom, are the essence of what it takes to make either the good engineer or the good physician. Such qualities can be the fruit of an education which gives experience in the moral as well as in the material components of our living.

With these points of similarity between present-day medical and engineering education in mind, let us look back for a moment at the pathways of their evolution. We shall find that although they now are running in somewhat close parallelism, their origins were far removed from one another.

Medicine emerged originally as a function of the priesthood. Born of the desire to bring to bear upon the physical and mental suffering of mankind, the healing power of deity, only subsequently did it become, in part, scientific in its nature. On the other hand, from its very beginnings in the dawn of history, engineering must have been scientific at least to the extent that it required some knowledge of quantitative principles in order to accomplish its practical purposes.

It is more recent history, however, that concerns us in this present analysis. From the era of the Renaissance onwards, one finds medicine progressing as a practical art, illuminated from time to time by flashes of scientific insight, and gaining steadily in respectability and social status, until it took its place beside law and theology as one of the learned professions.



Massachusetts General Hospital

A practical example of the union of medicine and engineering is shown here as Gordon L. Brownell, '50, Ph.D., physicist at M.I.T. and the Massachusetts General Hospital (left), works with John B. Stanbury, M.D., physician at the Massachusetts General Hospital and the Harvard Medical School, making use of radiation to solve medical problems.

As such, medical education became an altogether proper function for the great universities, and for the most part faculties of medicine have become university faculties. Not so with engineering, which receiving no corresponding academic accolade, has been obliged to develop its own independent system of education. This it has done by creating its schools and institutes of technology, which in turn, in the course of their evolution, have now come close to full university stature. It was early recognized that engineers, no less than other professionals, need general as well as vocational education. Therefore, in order to provide this, the engineering schools have added unto themselves all those disciplines which are necessary to give it.

Not having originally penetrated the fold of the traditional university as had medicine, engineering has made its own near-university fold for itself. Thus medical and engineering education, starting far apart, have subsequently drawn together in some important fundamentals, and this fact packs a challenge which is quite worth identifying.

In brief, the great schools of technology of today have actually become, as James R. Killian, Jr., '26, President, has said, universities polarized around science. They have reached the point of being proper breeding grounds for any of the professions which render a skilled service to the community requiring a firm and broad foundation in the basic sciences. The list includes not only all the subspecies of engineering, but architecture, industrial management, and at least a portion, of medical education as well.

As a matter of fact, M.I.T. has been giving premedical education almost since its very beginning, or at least after their undergraduate years, certain of its alumni have had no difficulty in being accepted by medical schools. Only very recently the Institute has issued an attractive brochure entitled "Premedical Programs at M.I.T." This proclaims that "over 400 physicians now practicing in the United States took

their premedical work at M.I.T., and currently a dozen or more M.I.T. seniors each year enter leading medical schools in the United States and abroad." I got part of my own inspiration to study medicine when I was a special student in biology under the late Professor William T. Sedgwick in the academic year 1902-1903 "when M.I.T. was Boston Tech," and Samuel C. Prescott, '94, Professor of Industrial Biology, Emeritus, was one of my teachers!

The premedical brochure makes the point that there should be no set premedical course. Medicine needs people with many different kinds of background and preparation. The "quality they must all have in common is breadth, as well as some depth, in learning." The same can be said of engineering.

In April, 1948, I had the privilege of attending an interprofessions conference on education for professional responsibility held at Buck Hill Falls, Pa. The guiding genius of this meeting was Elliott Dunlap Smith, Provost of Carnegie Institute of Technology. The professions he called together were law, medicine, theology, engineering, and business administration. The avowed purpose was to compare the objectives, methods, and human relations of these several disciplines in order to derive principles which determine professional and social responsibility in all of them. It is interesting that of the five professions chosen, three are of the group of old learned professions, and two are, relatively, newcomers. From its inception, M.I.T. has served engineering and, more recently, business as well. Moreover, the Institute also seeks to provide the opportunity for its students to acquire that broad background of learning so necessary in all professional work.

The gist of the Buck Hill Falls deliberations was that professional education must inculcate the recognition and acceptance of responsibility in professional matters, and that in company with general education, it must participate in preparing professional students for "effective citizenship and cultivated living" as well. It was believed desirable that general education and professional education be so related to one another that these values can be attained "without allowing four college years to elapse before education takes on the vitality and usefulness that it could have from the start." For the very reason that it has been obliged to develop its own educational system, engineering alone, of the professions under discussion, has succeeded to some degree in effecting such educational integration.

As one looks at professional education other than in engineering, it is at once apparent that a sharp dichotomy exists between the general education at the college level and the professional education at the graduate level. Very often the two are given in different institutions — always they are given by different faculties. Beyond the fact that certain subjects are required for admission by the professional schools at the college level, in practice there is but little educational continuity between them. For the student in a liberal arts college who looks forward to a career in medicine, the struggle to get into medical school itself creates a veritable obstacle to the attainment of the educational integration which would seem so desirable. The term "premed" discloses what I mean.

At the college level, requirements for entering the medical schools are largely basic science, and therefore (if entered in the right spirit) a proper part of well-conceived general education. Entrance requirements in the premedical schools, however, may become reduced to mere leverage subjects, in which excellence is sought by the student, not for purposes of general education, but for the ulterior one of getting him into medical school. These premedical subjects may indeed become merely inclusion bodies in the liberal arts program, unrelated to the rest of it. But they may also undermine such a liberal arts program, converting it from true general education to prevocational training. Instead of rejoicing in the opportunity for general learning (of which science is a normal part) the college student headed for medicine already regards himself as a professional person — a “premed” — and the only responsibility of which he is conscious is that of equipping himself for that single discipline. The label “premed” itself may impose something of an educational strait jacket. I have had undergraduate students say to me that they would like to profit by the wealth of opportunity afforded by a liberal arts program, but cannot afford the time and effort necessary to do this, because getting into medical school is their primary objective, and for this one must earn high marks in physics and chemistry.

In engineering schools professional education has always begun at the undergraduate level, and many an engineer has entered the practice of his profession upon completion of the undergraduate course. A situation of this kind is equivalent to entering medical school directly from secondary school, and starting the practice of medicine immediately after graduating from it. Such a sequence has, to be sure, occurred in the past, but now it is no longer permitted. A minimum of two years — and more usually three or four — are spent at the college level before entering medical school.

The undergraduate student in an engineering school is in no such potentially frustrating position as is the premedical student in a liberal arts college. Unlike the premedical student who has a struggle ahead of him to gain entry to his professional school, the student of engineering is already in. Along with his professional training a modicum of general education is also offered the student of engineering; indeed at times it may be forced on him.

As educational evolution has progressed, however, the tendency has been for ever more engineering students to elect to stay on for graduate studies leading to advanced degrees in engineering. In this respect engineering and medical education have drawn together. But there is an important difference. In engineering there need be no change from one school to another; in medicine, the student transfers from a faculty of arts and sciences (with little interest or understanding of medicine) to a faculty of medicine with a similar lack of interest in general education. Engineering thus escapes the dichotomy of medical education. In training engineers, general and professional education can flow along together uninterruptedly from Freshman year to the doctorate, and the possibility exists of relating the two meaningfully, although consummation is as yet far from complete.

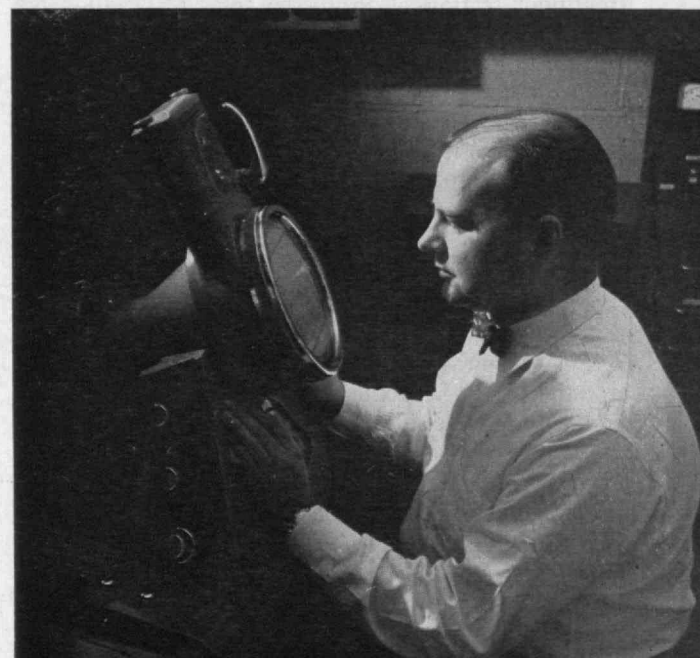
It is time, now, to disclose the point of the analogy which I have been attempting to draw between engineering and medical education. Briefly it is that having developed their departments of basic science to a high degree of excellence and distinction, having greatly enriched their schools of humanities, and having become in fact “universities polarized around science,” engineering schools are now uniquely qualified to expand their contributions to medical education. Although “institute of technology” remains their generic name, they are in fact educating career physicists, chemists, biologists, economists, architects, and industrial managers as well as engineers. Since institutes of technology offer, in very fine quality, most subjects needed to educate physicians, up to what is called the clinical level, why should they not now appropriately add this band to their already broad spectrum of professional education?

Recently I asked a member of M.I.T.’s Class of 1956, who has already been accepted by a leading medical school, when he made up his mind to go into medicine. He replied that it was in his high school days. I then asked why in that case he chose M.I.T. for his undergraduate education. “Because it excels in its basic science teaching,” was his answer.

The reasons for claiming that institutes of technology are uniquely equipped to participate in medical education have already been partly indicated. The excellence of basic science is one, the avoidance of a confusing dichotomy between college and professional school education is another. The possibility of continuing under a single faculty up to the point of clinical application is very appealing to me. I believe it would permit the achievement of that meaningful relationship between general and professional education, and the development of the sense of responsibility, both professional and to the community, which the Buck Hill Falls conference regarded as prime desideratum.

With doctorate degrees in both medicine and biophysics, Myles Maxfield, '50, Assistant Professor of Biophysics, is well qualified to direct the training of M.I.T. students who ultimately wish to follow careers in medicine.

M.I.T. Photo



I also believe that expansion of the educational function of an institute of technology into the medical field would benefit its whole operation. The intermingling of students headed for a variety of professions, but having the common need for firm grounding in basic science, is of itself of high educational value. The introduction of a medical element would enhance this process still further. Some subjects now taught, at least at M.I.T., would be peculiarly enriched by closer contact with medicine.

Actually, of course, M.I.T. has collaborated in medical activities on several fronts for a long time. Professor Robley D. Evans of the Department of Physics, for example, studied radium poisoning with Dr. Joseph C. Aub at the Huntington Memorial Hospital as early as 1934. Then in 1937 with the advent of radioactive iodine, Evans began a series of investigations in co-operation with medical investigators which has continued with broadening scope ever since. The application of radioactive iodine to problems of the thyroid gland, studied jointly with members of the Thyroid Clinic of the Massachusetts General Hospital, seems to have been the first use of radioactive isotopes in medical research. In passing, it is worth noting that it was the promise of this early work with radio iodine which made it possible to raise the money with which to build the cyclotron at M.I.T. A great expansion of isotope work by the Institute and the teaching hospitals of Boston has taken place since those days. During World War II, Evans with Aub, and the late Soma Weiss, used radioactive isotopes of iron in studies on the preservation of blood for the Armed Forces, and after the war, with Ivan Frantz in studies on proteins with radioactive carbon. Later Gordon L. Brownell, '50, research associate in the M.I.T. Physics Department working at the Massachusetts General Hospital, used radioactive arsenic for the localization of brain tumors. It is no exaggeration to say that the use of radioactive isotopes has greatly widened the frontiers of medicine. In this development, M.I.T. has played a pioneer and essential role. The pioneering work in the use of radioisotopes represents a fruitful union of physicist and physician.

In the field of high-voltage x-ray therapy, the treatment station of Professor John G. Trump, '33, operating in collaboration with the Lahey Clinic and within the Department of Electrical Engineering, constitutes another M.I.T. excursion into medicine, likewise pioneering in character. In this case, patients actually come to the Institute for treatment.

Of course, the Institute has its own medical department, which not only offers medical care to students, faculty, and employees, but also participates informally in the educational process from the psychological point of view, and at the research level in certain problems of preventive medicine. Within the Medical Department, Dr. Harriet L. Hardy, Assistant Medical Director, has built up an occupational medicine sub-department, which has become very distinguished. Not only does it have the duty of protecting the whole Technology family from the peculiar chemical and radiation hazards of the kind of work which goes on here — but it conducts research in these fields also. The Medical Department

is not officially a teaching department, but its usefulness could be extended were it to become one.

In view of these impressive facts, I have in mind that M.I.T. might do much more in the medical field. Undergraduate students, working in the general area indicated in the premedical brochure, might be offered the opportunity to continue expansion of their M.I.T. training for an additional two years, studying those science subjects required for admission to the third-year class of medical schools. During this time, students in such a program could earn bachelor's and master's degrees. They would not necessarily be committed to medicine until well along in such a program. They might instead proceed toward doctorates in more basic disciplines — biochemistry, physiology, microbiology, or one of the behavioral sciences. Some fundamental knowledge of the action of noxious agents is very broadening in all these disciplines.

I have long thought that an advance could be made if a faculty of arts and sciences, and one of medicine, would collaborate to offer such a program, but the deep cleavage existing between these, and the frequent switching from one institution to another by students, make this extraordinarily difficult. But no such difficulty would arise were an institute of technology to offer such a program. It would be quite similar to what already occurs in England where students matriculate as Freshmen at Oxford or Cambridge, and stay there until they go to London for a couple of years for clinical training at one of the teaching hospitals. In contrast to the struggle to get into the first-year class of medical schools, students would have no difficulty at all in getting into the third. Many medical schools have capacity for more third- and fourth-year students, and therefore are eager to get good transfer students. Heretofore, the source of these has been the two-year medical schools like that of Dartmouth, for example. But many of these are extending their training to four years, and therefore are themselves absorbing much of the present supply of transfer students. If M.I.T. offered a program such as I have suggested, my prediction would be that its graduates would be avidly "snapped up" for the third-year classes of top-ranking medical schools. I would also expect them to be better prepared in some respects, at that level, than those who had come up the conventional ladder. Further, I believe that M.I.T. teaching of such subjects as microbiology, pathology, immunology and pharmacology, of itself would add new meaning to our existing subjects of biology, biochemistry, and biophysics, quite apart from its obvious utility in medical education. I have no doubt that engineering throws back to physics, or other basic sciences, challenges which otherwise would not have been recognized. So, too, does medicine; from its observation of disease, fundamental questions arise which might not otherwise have entered the head of student or teacher of basic science.

Finally, I would expect that, on the more human level, a medical function in our midst would contribute to the depth of understanding in our areas of social sciences, economics, and industrial management. If this proved true, it would be further justification for M.I.T. to participate in the education of those who serve the medical function.

SHORTAGE OF Engineers and Scientists

*Five Possible Attacks on This Problem Are Outlined;
All Will Have to Be Employed Vigorously So That the
Nation's Technical Man Power Will Be Properly Trained*

By JOSEPH W. BARKER

It is reliably reported that industry, government, and educational institutions have a present manpower shortage of not less than 35,000 engineers and scientists; the figure is more probably of the order of 50,000, and it may run as high as 70,000. This June we shall graduate about 23,000 in science and engineering, and before we get to June, 1957, with something between 23,000 and 25,000 graduates, losses from retirements and deaths will have brought the shortages back to about 50,000. This statement is predicated upon a continuation of business activity at the level of an annual Gross National Product of 400 billion dollars — the present rate at which business has leveled off after its recent rises. It is further predicated on the assumption that there will be no increase in the ratio of engineers and scientists to other employees. The estimate also allows for no increase in the number of teachers of science and engineering in our total educational system, from high school through university.

I have depended upon the most conservative estimates of professional economists for the statement that Gross National Product will rise to something more than 400 billion dollars, before leveling off in the last quarter of this year and will continue at about the 400 billion dollar annual rate for 1957. Of course, there must be some element of crystal-ball gazing in those predictions. There is some uncertainty in guessing whether or not the "cold war" will get hotter; whether it will stay at its present temperature, or will get colder. Whichever way our defense preparations go will certainly have an effect upon Gross National Product.

The assumption that there will be no increase in the ratio of engineer-scientist employment to total employment in industry is certainly overly conservative. In 1900, industry in the United States employed one engineer or scientist for every 250 employees; by 1950, this had increased to one for every 60, and it is still increasing. For example, in 1953, the General Electric Company is reported to have had one engineer or scientist for every 15 employees and today that ratio is nearer one to 10. In the aircraft industry it was one to eight in 1954. Every new technological development tends to increase this ratio. Every increase in labor rates moves industry closer to more automation and this, again, increases the ratio of engineers to total employees. Hence, my assumption that there will be no increase in this ratio by June, 1957, cannot but be extremely con-

servative in calculating what the shortage will be by June of 1957.

Our entire educational system, from junior high school through university, is presently suffering from a serious shortage in the number of qualified teachers in *every* field. In the high schools the shortage of qualified teachers is most acute in mathematics, physics, and chemistry. Teachers of the same subjects — plus engineering — are acutely needed in our colleges and universities. This shortage is aggravated by the simultaneous shortages in industry and government, since even starting salaries in industry, being higher than those in schools, tend to draw teachers with scientific or engineering training away from the schools. Yet, a lack of qualified science teachers in the schools tends to discourage students from selecting science and engineering as careers. We are in a vicious cycle.

When we consider what may be done to break this vicious cycle in order to secure more engineering and science graduates to fill the yearly demand and to

U.S. Steel Corporation



cut down the accumulated shortage, we find still other discouraging trends. For the past seven to 10 years, the percentage of high school students studying mathematics, physics, and chemistry has been rapidly declining. These high school studies are prerequisites for admission to engineering or science majors in most of our colleges. The free elective system so widely prevalent has made it possible for high school students to graduate without undertaking these rigorous and demanding subjects. The students have been encouraged to seek the easy way. In addition, the lack of enthusiastic, competent, and dedicated teachers of science has tended to discourage even those students who initially desired to pursue these science prerequisites for admission to engineering and science programs in college. Under such conditions, it is not difficult to see why graduating college classes in engineering and science have been declining since 1950, even in the face of the known high demand for engineers and scientists.

It also is true that, in the years immediately following World War II, the U.S. Department of Labor was anticipating a serious depression. This Office issued *Guidance Counseling Advice* (which became widely disseminated in the high schools) to the general effect that engineers and scientists would be in oversupply, due to the intensive war effort in training such men. Under the influence of this advice, high school guidance counselors discouraged students from attempting engineering and science careers. Now we are reaping the whirlwind of this misinformation. It was not until the fall of 1953 that engineering and science freshman enrollments in our colleges began to increase materially. It will be at least two years before these enlarged classes graduate to enter industry and teaching.

Industry's Stake

Since the quality of high school teaching of science has a marked effect not only on the numbers but also on the intellectual quality of the students entering college for science majors or engineering, industry should have a very large stake in seeking to improve teaching levels. But industry is competing with the schools for the limited number of graduates. For the most part, salaries of high school teachers are based upon a fixed scale which depends upon the number of years of teaching and the amount of credit in educational methodology, which the teacher has accumulated toward an advanced degree in education. The law of supply and demand is not permitted to enter the teaching salary scale nor is *quality* of teaching permitted to be a factor in salary. Industry, on the other hand, operates completely under the law of supply and demand. Starting salaries offered for science and engineering graduates rise as the demand exceeds the supply. At the present time, the industrial recruiting parties on our college campuses and the employment advertisements in every metropolitan newspaper are offering a minimum of \$400 per month for graduates with a bachelor's degree. How can a public school system compete for these men and women when most school starting salaries are at the average of \$300 to \$325 per month?

Let me point out another very important group of statistics. College graduates are approximately 22 or 23 years old. This means that they were born about 1933-1934, when the birth rate for the nation was at a very low point; this was one of the effects of the great depression. This age group also suffered casualties in the Korean conflict and hence the remainder is numerically even smaller than normal for an equivalent birth rate. It was not until the later years of World War II that our national birth rate began its sensational climb to its present level. For instance, the average birth rate from 1930-1939 was about 2.4 million, but by 1954 it had climbed to 4.1 million, and is still tending upward. These increased birth rates have produced a wave of students presently crowding our elementary schools. Shortly, it will be pushing junior — and soon, thereafter, senior — high school enrollments to something approaching double the enrollments of 1950.

To furnish teachers for the public schools so that these vastly increased enrollments may be handled effectively is a vital and serious problem for the maintenance, alone, of our educational system without giving any leeway for *improving the quality* of education. These teachers must come from the smaller numbers in the preceding age groups and must be secured in the face of competition from industry. Do not for a moment minimize the critical problem facing your school administrators. They are in need of your sympathetic consideration and effective co-operation at this time.

Just to give you one more complicating factor, let me mention the centrifugal tendencies in our metropolises. Suburbs are springing up in ever greater numbers and at greater distances from the urban center as the automobile makes travel quicker. Suburbanization makes new school buildings a necessity and these become another demand upon the school tax dollar. Certainly, new school building needs are competing with teacher salary raises for parts of the tax dollar. And communities have already been forced to raise the school tax rate to heights which threaten community development.

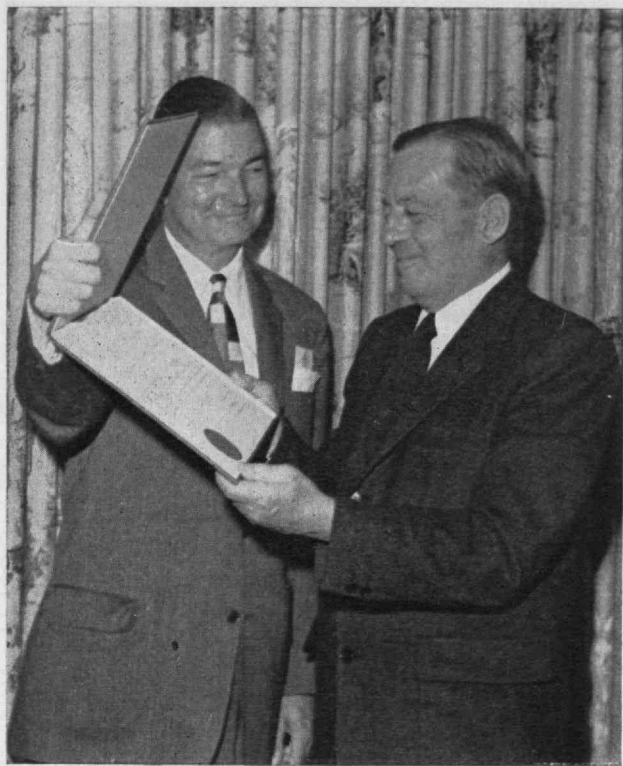
Have I painted such a sad state of affairs that you despair of any solution? Certainly, I hope not. But we must face what seem to be the facts of the case. Now, let me try to give you some possible methods of attack upon these problems.

Five Methods of Attack

First of all, I believe that industry must re-evaluate its demands for scientists and engineers. Wherever possible, technicians must be used in place of junior engineers and scientists. Even where this type of employment has been shown to be valuable "on the job" training for young graduates of engineering and science, we cannot afford to be profligate when the demand so far exceeds the supply. We must use engineers and scientists only where no one else can properly perform the duties. Such re-evaluation might well reduce the demand somewhat.

Second, I believe our schools could well reconsider the "certificate for teaching" requirements. For in-

(Continued on page 364)



All Photographs by Peter Woodbury

MORE than 400 M.I.T. Alumni on the West Coast attended a day-long Regional Conference held in Los Angeles on March 17, with an extra complement of wives and friends helping to jam the Banquet Room of the Hotel Ambassador for the evening festivities. The vigorous speech of James R. Killian, Jr., '26, President, on the improvement of engineering education was the principal after-dinner attraction. It was preceded by the presentation, to Donald W. Douglas, '14, of a citation for outstanding service to the country and the world. Dwight C. Arnold, '27, President of the Alumni Association, made the award. Mrs. Douglas, also present, received a set of eight M.I.T. Wedgwood bone china plates, designed by Samuel V. Chamberlain, '18.

The Conference, dedicated to the theme, "The Impact of Today's Technology," opened promptly at 10:00 A.M. in the hotel's large auditorium, with Samuel E. Lunden, '21, presiding. Mr. Lunden shared the rostrum with Anthony Thormin, '27, President of the M.I.T. Club of Southern California, in introducing Mayor Norris Poulson of Los Angeles. His Honor's dark suit was enlivened by a brilliant green tie, which he had worn, he said, as a greeting to his Irish friends in and out of the audience on this St. Patrick's Day of 1956. Mr. Lunden observed, after the Mayor's greeting, that the tie might also symbolize the "smog green" condition with which the city had greeted the large team of Institute visitors.

First speaker of the morning was Gordon S. Brown, '31, Head of the M.I.T. Department of Electrical Engineering, introduced by William H. MacCallum, '24, a former president of the sponsoring club. Dr. Brown regretfully announced that he was pinch-hitting for George R. Harrison, Dean of the School of Science, unhappily confined to a sickbed in Cambridge. With his unflinching, though gentle vigor, Dr. Brown gave the audience a rapid-fire discussion of automation,

West Coast Regional Conference

By DAVID O. WOODBURY

Dwight C. Arnold, '27, President of the Alumni Association (left), presents to Donald W. Douglas, '14, citation for outstanding service to the country.

which he characterized as a horrid word, whose fascinating gadgetry often is confused in the public mind with its tremendous social and scientific implications. "Technology is an open-ended issue," was Dr. Brown's theme. Minor hardware, such as radio and television, he urged, are merely closed-ended details that will pass on to something better. He disagreed, also, with newspaper headline writers who insist that automation spells the "second industrial



William L. Stewart, Jr., '23, banquet moderator, in action at the West Coast Regional Conference on March 17.



From Extreme left: H. Guyford Stever at lectern, and Hall L. Hibbard, '28, moderator; E. P. Brooks, '17, talks on management. Above: Mrs. D. O. Woodbury, Mrs. Fossett, Richard L. Fossett, Jr., '33, and Gordon S. Brown, '31.

revolution." "If it is a revolution," he said, "it is an intellectual one."

Second morning speaker was Theos J. Thompson, Associate Professor of Nuclear Engineering. Dr. Thompson received the rapt attention of everyone in his description, illustrated by numerous slides, of M.I.T.'s new research reactor. Especially interesting was his statement that the time required to design the reactor had been shortened by at least two years by the use of the Institute's great computer, Whirlwind.

Both speakers were besieged with questions after their talks. Luncheon followed immediately, in the hotel's main ballroom.

Charles H. Toll, '23, chairman of this meeting, introduced Julius A. Stratton, '23, Vice-president and Provost of the Institute, who gave the Alumni a vivid description of the Lincoln Laboratory and its origins. Many of Dr. Stratton's listeners heard details on the Lincoln Laboratory for the first time, since its work has been highly secret. All members of his audience were on virgin ground when he showed the U.S. Air Force film, SAGE (Semi-Automatic Ground Environment). This was the first open showing on the West Coast of this exciting documentary film portraying the ultra-modern data-processing defense system, on which Jay W. Forrester, '45, and his associates have been working with the Armed Forces for the past five years. Many Californians hoped that an early descendant of SAGE would be installed somewhere near Los Angeles.

Following luncheon, the Conference moved straight from the film showing to the auditorium for the after-

noon session, under the chairmanship of Hall L. Hibbard, '28. Mr. Hibbard, Engineering Vice-president of Lockheed Aircraft Corporation, was well chosen to introduce H. Guyford Stever, presently Chief Scientist of the Air Force, who next July returns to M.I.T. as Associate Dean of Engineering.

Dr. Stever left no doubt of the impact of today's technology in his telling demonstration that the engineering backlog of today in aviation will set the stage for tomorrow's technical advance. He discussed pressing problems, such as the air-traffic congestion, sure to accompany the adoption of commercial jet airplanes, the need for military aircraft that can take off and land vertically, and the very severe problems of nuclear propulsion in the air. Dr. Stever touched upon the satellite, which, he said, is no easy problem, but perhaps less difficult than the problems of inter-continental guided missiles. The usual question about flying saucers found Dr. Stever prepared with a quotation from George E. Valley, Jr., '35, Associate Director of the Lincoln Laboratory, leaving the questioner about where he started.

The slightly military flavor which had obtained all day was completely set aside by genial E. P. Brooks, '17, Dean of the School of Industrial Management. If possible, the remarks of Dean Brooks were even more closely followed than those of previous speakers, since virtually all of his audience were businessmen themselves. He outlined the origin and philosophy of the new School of Industrial Management and discussed the many problems confronting
(Concluded on page 362)



Left: (in reading order) William H. MacCallum, '24, helped organize the Conference; Samuel E. Lunden, '21, presided at the morning session; Anthony Thormin, '27, introduced Mayor Poulson; and Dwight C. Arnold, '27, President of the Alumni Association. At right: Charles H. Toll, Jr., '23, chairman of the meeting.



THE INSTITUTE GAZETTE

PREPARED IN COLLABORATION WITH THE TECHNOLOGY NEWS SERVICE

First Fellow for Advanced Study

EDWIN H. LAND, President of the Polaroid Corporation, has been appointed a fellow of the School for Advanced Study at the Institute, according to James R. Killian, Jr., '26, President of M.I.T. Dr. Land will be a part-time Visiting Institute Professor, devoting as much attention to educational and research activities at M.I.T. as his duties at the nearby offices of Polaroid in Cambridge permit. He is the first fellow to be appointed to the new School for Advanced Study, which will be inaugurated next fall. The School is being established to provide a means for the informal association of visiting scholars from all over the world with the M.I.T. Faculty.

Dr. Land is a native of Connecticut and attended Norwich Academy there, and Harvard University. He began his studies of the polarization of light while in college and established Polaroid Corporation in Cambridge in 1937 for the manufacture of optical devices employing the principles of polarization.

In 1932, Dr. Land announced at a Harvard University colloquium the invention of the first light-polarizing material in sheet form, which has subsequently been applied to sunglasses and camera filters, special ray filters and sighting devices for military instruments, "3-D" motion and still pictures, and non-dazzling automobile headlights. He is the inventor of the Land camera, introduced in 1947, which makes possible immediate development of photographs.

A recipient of many awards, Dr. Land was given the Hood Medal by the Royal Photographic Society in 1935; the National Modern Pioneer Award by the National Association of Manufacturers in 1940; the Rumford Medal by the American Academy of Arts and Sciences in 1945; and the Duddell Medal by the Physical Society of Great Britain in 1949.

Among the numerous professional groups to which Dr. Land belongs are the American Academy of Arts and Sciences, of which he was president in 1951, 1952, and 1953; and the National Academy of Sciences. He is a member of the Advisory Board of the Hoover Institute and Library.

Professor of Architecture

EDUARDO FERNANDO CATALANO, a noted Argentine architect, has been appointed professor of architecture at M.I.T., according to Pietro Belluschi, Dean of the School of Architecture and Planning. He will come to the Institute in the fall of 1956.

Mr. Catalano has had an active career as a practicing architect in Buenos Aires (1941-1950) and as a teacher of architecture in this country and Argentina. He is now acting head of the Department of Architecture in the School of Design at the North Carolina State College.

Before he went to North Carolina as a visiting associate professor in 1951, Mr. Catalano taught for

a year in the School of Architecture of the Architectural Association in London, England. In 1946, after having received a master of architecture degree from Harvard University, he was appointed professor in the School of Architecture at the University of Buenos Aires. He has lectured at the Georgia Institute of Technology, Tulane University, and M.I.T.

Mr. Catalano received his undergraduate training in architecture at the University of Buenos Aires, and was graduated in 1940. While studying for a master's degree at the University of Pennsylvania in 1944, he was on commission from the University of Buenos Aires to study the curriculum in architecture of the United States and South America. His government also commissioned him in 1947 to study theater lighting and mechanical equipment.

Little Visiting Professor

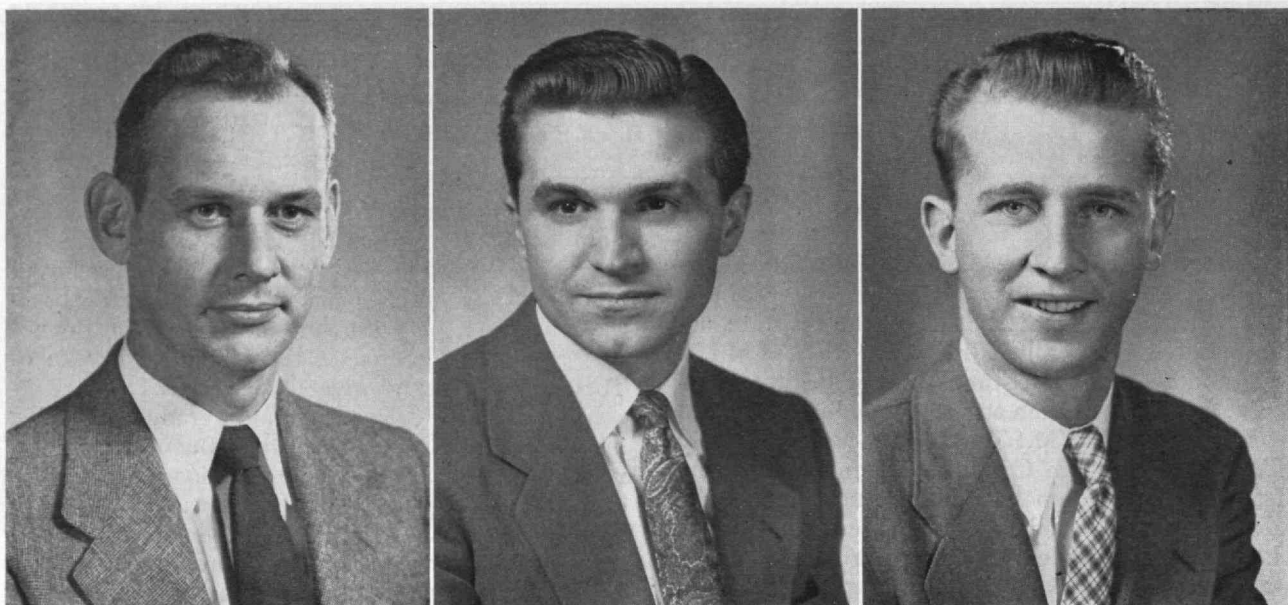
HUGH C. LONGUET-HIGGINS, distinguished British investigator in the field of molecular theory and John Humphrey Plummer Professor of Theoretical Chemistry in the University of Cambridge, England, has been named Arthur D. Little Visiting Professor of Chemistry at the Institute for the current semester.

George R. Harrison, Dean of the School of Science at M.I.T., who reported the appointment, also announced plans for a series of lectures on the application to chemistry of modern physical theories of atomic and molecular structure to be presented by Professor Longuet-Higgins during the spring term. These lectures will be open to all chemists in the Boston area, as well as to the M.I.T. community generally.

Professor Longuet-Higgins is one of Britain's outstanding younger scientists. His training was received at Oxford University where, as a member of Balliol College, he took the M.A. and D. Phil. degrees. After research work on the theory of the structure of diborane and other fundamental molecules, he came to the United States in 1948-1949 as a research associate with the Laboratory of Molecular Spectra and Structure at the University of Chicago. From 1949 to 1952, Professor Longuet-Higgins was reader in theoretical chemistry at the University of Manchester, where he made notable contributions to the theory of solutions and the electronic structure of molecules.

In 1952 he was named professor of theoretical physics at King's College, University of London, a chair whose tradition dates back to its first incumbent — James Clerk Maxwell. In 1954 Professor Longuet-Higgins succeeded Sir John Lennard-Jones in the Plummer Professorship at Cambridge. He is a fellow of Corpus Christi College there.

He has served the British government and British industry in various capacities, and is a councillor of the Faraday Society. In 1951 the Chemical Society of London awarded him its Harrison Memorial Prize for the most meritorious series of research publications by a British scientist 30 years of age or under.



M.I.T. Photo

Important administrative posts at the Institute will be filled by the three M.I.T. Alumni pictured above. Left: Philip A. Stoddard, '40, has been named assistant treasurer of M.I.T. He was formerly associate placement officer and acting director of the Industrial Liaison Office. Center: Vincent A. Fulmer, '53, an officer of the Industrial Liaison Office becomes acting director of the I.L.O. Right: Merrill J. Baumann, '52, who has been on active duty with the U.S. Navy, is to be one of M.I.T.'s Industrial Liaison Officers.

In Administrative Posts

THREE appointments to important administrative posts have been announced. Philip A. Stoddard, '40, formerly Associate Placement Officer and Acting Director of the Industrial Liaison Office, has been named assistant treasurer of the Institute. Vincent A. Fulmer, '53, Industrial Liaison Officer, has been named acting director of the Industrial Liaison Office. Merrill J. Baumann, '52, who was graduated from M.I.T. in 1952 and has since served on active duty with the U.S. Navy, has been named as one of M.I.T.'s Industrial Liaison Officers.

Mr. Stoddard's appointment was announced in March by Joseph J. Snyder, 2-44, Vice-president and Treasurer of the Institute. In his new post, Mr. Stoddard will serve as a deputy of the Vice-president and Treasurer "on operations relating to the physical property of the Institute, the various services provided the Faculty and students at M.I.T., and the services — other than fiscal — furnished the Institute's research laboratories," Mr. Snyder said. In addition, he said, Mr. Stoddard will represent the Vice-president and Treasurer in the activities of the Industrial Liaison Program.

Under his new appointment, announced in March by Admiral Edward L. Cochrane, '20, Vice-president for Industrial and Governmental Relations, Mr. Fulmer will direct the activities of the Industrial Liaison Office, aimed to help keep participating companies informed of technical developments at the Institute and to express at the Institute the technical needs and interests of co-operating industrial organizations.

Mr. Baumann, whose appointment as Industrial Liaison Officer was also announced by Admiral Cochrane, will serve in this important program of bringing together industrial research and Institute technical developments.

Mr. Stoddard, a native and resident of Hingham, attended Hingham High School and Phillips Exeter Academy before entering M.I.T. from which he was graduated in 1940. After military service with the Third Armored Division in Europe during World War II and an administrative appointment at Ingersoll-Rand Company, Mr. Stoddard returned to M.I.T. in 1947. He then became assistant to the Executive Officer of the M.I.T. Instrumentation Laboratory.

He has since held other administrative posts in M.I.T.'s Division of Business Administration. He has been acting director of the Industrial Liaison Office since February, 1955, while its regular Director, William R. Weems, '35, is on leave of absence to serve on a technical mission to Korea.

Mr. Fulmer came to M.I.T. in 1949 after graduating *cum laude* from Miami University, Oxford, Ohio. After completing the course requirements and general examinations for the Ph.D. degree in industrial economics in June, 1951, Mr. Fulmer became a teaching assistant in M.I.T.'s Economics Department. During 1952 he was an instructor in the Economics Department at Williams College, and returned to M.I.T. later that year to become assistant to the Director of the Executive Development Program in the Institute's School of Industrial Management; he joined the Industrial Liaison Office in 1953.

Mr. Baumann, who joins the Institute staff as Industrial Liaison Officer, was graduated from M.I.T. in 1952, majoring in the Course in Business and Engineering Administration. Since then he has been on active duty with the United States Navy, recently serving as chief engineer of a destroyer, the U.S.S. *Stephen Potter*.

Before coming to M.I.T., Mr. Baumann received the B.A. degree from Colgate University in 1950 where he was active in many athletic and other extracurricular affairs.



Harris and Ewing

New Corporation Life Members

◀ **Gwilym A. Price**

David A. Shepard, '26 ▶



Ferdinand Vogel

ELECTION of two life members to the Corporation of M.I.T. has been announced by James R. Killian, Jr., '26, President of the Institute. The new life members are: Gwilym A. Price, Chairman and President of Westinghouse Electric Corporation; and David A. Shepard '26, Director of the Standard Oil Company of New Jersey. Both had been term members of the M.I.T. Corporation since 1951.

Mr. Price, who became president of Westinghouse Electric Corporation in 1946 and chairman of the Board in 1955, is also a director of Eastman Kodak Company, Mellon National Bank and Trust Company, National Union Fire Insurance Company, Westinghouse Air Brake Company, and the Hanover Bank. Born in Canonsburg, Pa., in 1895, Mr. Price was graduated from the University of Pittsburgh Law School and admitted to the Pennsylvania Bar in 1917. He returned to the practice of law following World War I service as commander of the U.S. Army's 302d Heavy Tank Battalion, and in 1920 he became an assistant trust officer of the Pittsburgh Trust Company. A member of the Pennsylvania State Legislature in 1923 and 1924, Mr. Price rose from trust officer to president of the Peoples-Pittsburgh Trust Company before joining Westinghouse as vice-president in 1943.

Mr. Price holds honorary degrees from four colleges and is a trustee of the Carnegie Institute of Pittsburgh, the Carnegie Corporation of New York, Elizabeth Steel Magee Hospital in Pittsburgh, Allegheny College, and the Pittsburgh Y.M.C.A. He is a member of the Business Advisory Council for the U.S. Department of Commerce, president and director of the Zoar Home in Pittsburgh, and president of the Electrical Manufacturers Club.

Mr. Shepard, a Director of the Standard Oil Company of New Jersey, became associated with the Company as a research engineer immediately following his graduation from M.I.T. and has had wide experience with the Company's domestic and foreign affiliates. Born in Denver, Colo., in 1903, Mr. Shepard was awarded the degrees of bachelor of science (1926) and master of science (1927) in Chemical Engineering at the Institute. After holding positions as research engineer with Jersey Standard and with the

Standard Oil Development Company, he served for many years as European representative of the Development Company.

During 1942-1943, Mr. Shepard was Petroleum Attaché for the United States State Department in London, and in 1943 was appointed a special foreign marketing representative in the United Kingdom. He served from 1947-1949 with the Anglo-American Oil Company, first as shareholders' representative and later as chairman of the board. Mr. Shepard returned to the United States in 1949 as executive assistant to the president of Jersey Standard, and became a member of the board of directors in 1951.

Arthur A. Blanchard: 1876-1956

ARTHUR A. BLANCHARD, '98, Professor of Inorganic Chemistry, Emeritus — a distinguished teacher, researcher, and author of important technical works in the field of chemistry — died at his Brookline home on March 25, 1956. His long and devoted service to M.I.T. extended from 1903 until his retirement in 1941.

Dr. Blanchard, a native Bostonian, was graduated from M.I.T. in 1898 and became an assistant in the Department of Chemistry. Two years later he received a fellowship for study at the University of Leipzig, Germany, where he was awarded the degree of doctor of philosophy. Upon his return to this country, Dr. Blanchard served for a year as an instructor at New Hampshire College, now the University of New Hampshire, before rejoining the Institute staff in 1903 as instructor in inorganic chemistry. He was promoted to assistant professor in 1908, associate professor in 1914, and professor of inorganic chemistry in 1931.

Author of numerous books and papers on scientific and educational problems, Dr. Blanchard also achieved renown for his research in the field of inorganic chemistry. He was a fellow of the American Association for the Advancement of Science and the American Academy of Arts and Sciences, and held memberships in the American Chemical Society, American Association of University Professors, New England Association of Chemistry Teachers, and the American Forestry Association.

Acceptance of Scientific Theories

PHILIPP G. FRANK, distinguished physicist and philosopher, and retired lecturer on physics and mathematics at Harvard University, has joined the Faculty of M.I.T. for the current term as Visiting Professor in the School of Humanities and Social Studies. In announcing the appointment, John E. Burchard, '23, Dean of the School, said:

"Dr. Frank is the acknowledged master today of that line of scientific philosophy which is known as logical empiricism and which has found widespread acceptance among scientists. Once the successor of Ernst Mach and Albert Einstein as Professor of Theoretical Physics at the University of Prague, Dr. Frank presents the scientific positivism as Mach created it, in its most advanced form; and his work has become the textbook of a whole generation of scientific philosophers. At M.I.T., he will teach a guest course on the acceptance of scientific theories."

Dr. Frank was born in Vienna, Austria, in 1884, became privatdozent of physics at the University of Vienna, where he received his doctorate in philosophy, and at the age of 28 succeeded Einstein in the teaching chair at Prague. He held this post until 1938, serving as Dean of the Faculty of Science in 1934.

After coming to the United States, Dr. Frank taught mathematical physics and the philosophy of science at Harvard from 1939 until his retirement in 1954. He is the author of numerous books, including *Einstein, His Life and Times*, *The Law of Causality and Its Limitations*, *Relativity — A Richer Truth*, and *Modern Science and Its Philosophy*.

Four Faculty Appointments

Two Faculty promotions and two new appointments have been announced by Julius A. Stratton, '23, Vice-president and Provost of the Institute. Tau-Yi Toong, '48, a member of the M.I.T. staff since 1951, was promoted to associate professor of mechanical engineering; and George N. Hatsopoulos, '49, formerly an instructor in the Mechanical Engineering Department, was promoted to assistant professor.

New appointees to the Institute Faculty are: Mer-ton C. Flemings, Jr., '51, Assistant Professor in the Department of Metallurgy; and Lucian W. Pye, Assistant Professor in the Department of Economics and Social Science.

Professor Toong, who was born in Shanghai, China, is a graduate of National Chiao-Tung University in Shanghai, and received the degrees of master of science and doctor of science in 1948 and 1952, respectively, at M.I.T. Before coming to the United States, he had seven years' engineering and managerial experience in China. In 1951 he joined the M.I.T. staff as an instructor in Mechanical Engineering, and in 1952 he was promoted to assistant professor. Dr. Toong is the author of numerous technical articles in the fields of combustion, heat transfer, and fluid mechanics.

Professor Hatsopoulos had been head of the Engineering Division of Matrad Corporation (New York) and instructor at the Institute prior to his appointment as assistant professor of mechanical engineering. A naturalized American citizen and veteran of

the U. S. Army, Professor Hatsopoulos was born in Athens, Greece. He attended Athens Polytechnic before entering M.I.T., where he was awarded the degrees of bachelor of science and master of science in 1950, and the professional degree of mechanical engineer in 1954.

Dr. Flemings, Assistant Professor in the Department of Metallurgy, has returned to M.I.T. after two years as a metallurgist with the American Brake Shoe Company in Mahwah, N. J. He received the degrees of bachelor of science in 1951, master of science in 1952, and doctor of science in 1954 from the Institute, and held staff appointments from 1951-1954. Dr. Flemings is a member of the Foundry Educational Foundation, American Institute of Metallurgical Engineers, American Foundrymen's Society, Sigma Xi, and Phi Mu Delta.

Dr. Pye, who has specialized in Far Eastern studies, political science, and international relations, comes to M.I.T. as assistant professor in the Department of Economics and Social Science. He was graduated from Carleton College and, following World War II service in the U. S. Marine Corps, received his master's degree and doctorate at Yale University. From 1949-1956, Dr. Pye was instructor and assistant professor at Washington University, research associate at Yale, and research associate at Princeton's Center of International Studies.

Admissions and Translations

THE 316th dinner meeting of the Alumni Council was held on Monday evening, March 26, at the Faculty Club in the Sloan Building of M.I.T. Dwight C. Arnold, '27, President of the Alumni Association, presided. The Association's Secretary-Treasurer, Donald P. Severance, '38, reported seven changes in class affiliation and that 19 members of the M.I.T. staff and Alumni Council attended the Los Angeles Regional Conference on March 17. It was also reported that seven members of the M.I.T. family had visited seven M.I.T. clubs as far as Monterrey and Mexico City between March 5 to March 20.

In addition to the chairmen elected at the November 28 meeting of the Council, members of two Alumni Day subcommittees were announced as follows: *Luncheon Committee*: Garvin Bawden, '21, Francis B. Kittredge, '21, William L. Taggart, Jr., '27, William H. Carlisle, Jr., '28, Eric A. Bianchi, '29, William H. Dennen, '42, Donald A. Hurter, 6-46; *Ladies' Committee*: Mrs. Dwight C. Arnold, Mrs. E. P. Brooks, Mrs. James R. Jack, Mrs. Ralph T. Jope, Mrs. Robert M. Kimball, Mrs. Malcolm G. Kispert, Mrs. Donald W. Kitchin, Mrs. H. E. Lobdell, Mrs. Philip A. Stoddard.

Dr. Egon E. Kattwinkel, '23, announced that the subject of the Alumni Day Conference, on the morning of June 11, will be "Science and the Health of Mankind" and will deal with the role of the scientist and the engineer in prolonging man's life. Those taking part in the conference will include: Dr. H. van Zile Hyde, Chief of the Division of International Health of the United States Public Health Service; Gordon M. Fair, '16, Professor of Sanitary Engineer-

(Continued on page 358)

BUSINESS IN MOTION

To our Colleagues in American Business...

In making gas pressure-reducing valves and relief valves for hot water tanks, a famous manufacturer has to drill brass rod deeply. Originally the rod was free-cutting brass. When we had the opportunity to study the operations in the shop it seemed evident that Revere's Deep-Drilling Brass Rod should offer some economies. When drilled, this alloy produces very small, easily cleared chips, much smaller than free-cutting brass. The latter is excellent for most applications, particularly for external machining, or for shallow drilling, but for really deep holes, deep-drilling brass is superior. So the customer agreed to try it. The results were most satisfactory. The shop foreman reported that tool life was increased over 200%. In addition, it is possible to bore one item with a single operation, against the former practice of withdrawing the drill three times in order to clear the chips.

Another interesting experience with the same manufacturer involves a high-pressure gas valve, with a cast brass body and a brass rod stem, both machined to close tolerances. There was galling and flaking between stem and seat. Our analysis was that the two brasses were too close in hardness. The recommendation: switch to arsenical bronze valve stems, which have a higher hardness, and a greater torque strength. This proved to be the answer, making possible a better product, with fewer rejects due

to trouble at the seat. The more suitable alloy costs more per pound, but saves money in the end.

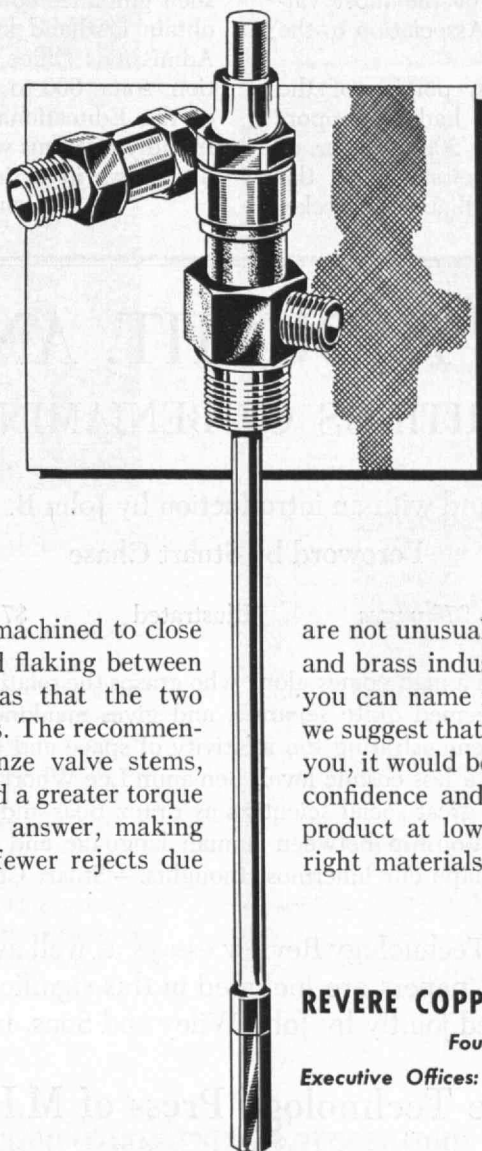
Here is a third example of our work with the same company. It was designing a new temperature-pressure relief valve for hot water tanks. The original model, hand-made for test purposes, had been machined out of solid hexagon brass rod, one inch outside diameter, and over half the weight had gone into scrap. It was recommended that

on a production basis a Revere high-leaded brass tube be used, hexagon outside, round inside. A trial order of only 2,000 pounds immediately proved itself.

The customer reported that though the tube costs more per pound, he buys less weight per foot, machine time is reduced substantially, and a much better machined surface is obtained. The latter is extremely important on the inside of the valve, which is machined to a seat.

These examples of the wisdom of paying more per pound in order to make a better product and save money in addition

are not unusual with Revere. Not only the copper and brass industry but practically every industry you can name is able to cite similar instances. So we suggest that no matter what your suppliers ship you, it would be a good idea to take them into your confidence and see if you cannot make a better product at lower costs by specifying exactly the right materials.



REVERE COPPER AND BRASS INCORPORATED

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Executive Offices: 230 Park Avenue, New York 17, N. Y.

THE INSTITUTE GAZETTE

(Continued from page 356)

ing, Harvard University; George R. Harrison, Dean of the Institute's School of Science; and Francis O. Schmitt, Institute Professor, Head of the Department of Biology at M.I.T.

Speaking on behalf of the Alumni Fund, Theodore T. Miller, '22, announced that contributions of \$392,000, received up to March 26, exceeded by \$156,000 those of the corresponding date two years ago, and are \$56,000 higher than those of last March. Although last year's record is not expected to be exceeded, it is evident that the Alumni Fund is now operating at a higher level than in previous years.

President Arnold spoke briefly of the Western Regional Conference (reported on page 351 of this issue) where a certificate was presented on behalf of the Alumni Association to Donald W. Douglas, '14, "who, as a pioneer in the aircraft industry, has exemplified the roles of creative engineer and courageous business executive." Mr. Arnold expressed the belief that Regional Conferences represent one of the most valuable contributions by the Alumni Association to the Institute's external relations.

Upon conclusion of the business portion of the meeting, the 113 Council members had the opportunity to hear B. Alden Thresher, '20, Director of Admissions, speak on "College Admissions and the Tidal Wave of Students," and William N. Locke,

Head of the Department of Modern Languages, and Director of Libraries, speak on "Machine Translation of Languages."

Since the end of World War II, there has been a great surge of applicants for college education. Applicants for admission to colleges have increased more rapidly than college facilities.

Each year there are about 15,000 to 20,000 potential applicants for admission to M.I.T. and about 5,000 of these submit applications or make some sort of inquiry. Approximately 4,000 complete all necessary forms required for admission, and from 1,800 to 2,000 are approved by the Admissions Office. Actually the entering class numbers about 900 each year. Thus, more time is spent in processing applicants for those who do not enter M.I.T. than for those who do, and the Admissions Office is engaged more in guidance and education of prospective students than in "recruiting."

In recent years, M.I.T. has sent Faculty members to various high schools throughout the country as part of this guidance program. Last year 37 members of the Faculty spent an average of about a week on this activity. The high schools welcome such guidance counseling and the Faculty members obtain firsthand knowledge of the problems of the Admissions Office at the high school level. In addition, some 600 to 700 Technology Alumni members of the Educational Council establish and maintain friendly relations with secondary schools and conduct interviews in various parts of the country to assist

(Concluded on page 360)

LANGUAGE, THOUGHT, AND REALITY

SELECTED WRITINGS OF BENJAMIN LEE WHORF

Edited and with an introduction by John B. Carroll

Foreword by Stuart Chase

xi + 278 pages

Illustrated

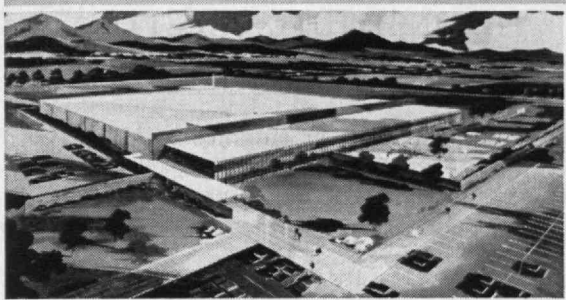
\$7.00

Once in a blue moon a man comes along who grasps the relationship between events which have hitherto seemed quite separate, and gives mankind a new dimension of knowledge. Einstein, demonstrating the relativity of space and time, was such a man. In another field and on a less cosmic level, Benjamin Lee Whorf was one, to rank some day perhaps with such great social scientists as Franz Boas and William James.

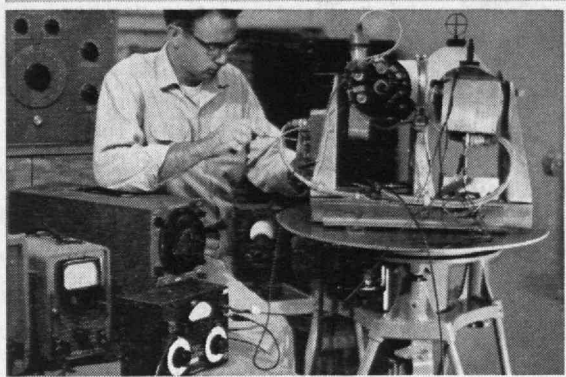
He grasped the relationship between human language and human thinking, how language indeed can shape our innermost thoughts. — Stuart Chase

Whorf's memorable Technology Review essays as well as important hitherto unpublished papers are included in this significant volume published jointly by John Wiley and Sons, Inc. and

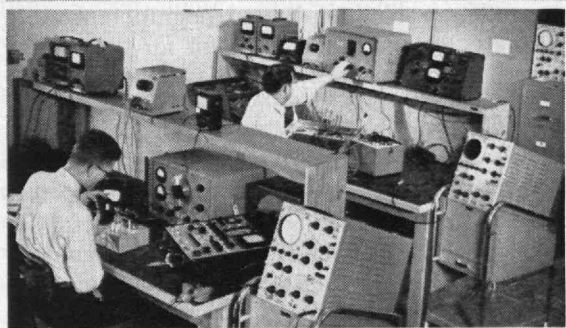
The Technology Press of M.I.T.



Denver manufacturing plant now under design



Infrared laboratory



Instrumentation laboratory

At Ramo-Wooldridge today there exists a wide range of projects intended to aid aircraft in navigating to the vicinity of targets, finding the targets, destroying them, and returning safely to base. Work is under way in such fields as infrared and microwave detection, information display, communication and navigation, and analog and digital computing. Some projects are in the laboratory development stage, some in the flight test stage, some in pilot production.

Good progress is being made in the establishment of facilities and operational patterns that are well tailored to the unique requirements of advanced electronic systems work.

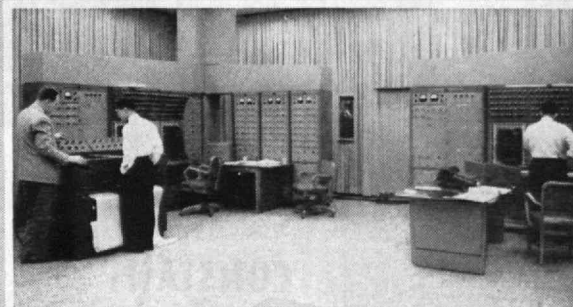
AIRBORNE ELECTRONICS AND WEAPON CONTROL SYSTEMS



Initial unit of flight test facility



Communications pilot line production



Simulators in computing center

Positions are available for scientists and engineers in these fields of current activity:

- Communications Systems
- Digital Computers and Control Systems
- Airborne Electronic and Control Systems
- Electronic Instrumentation and Test Equipment
- Guided Missile Research and Development
- Automation and Data Processing
- Basic Electronic and Aeronautical Research

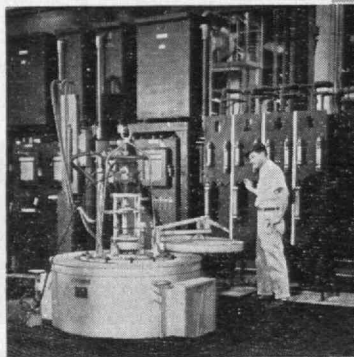
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HEVI DUTY

Precision Electric HEAT TREATING FURNACES

Industrial

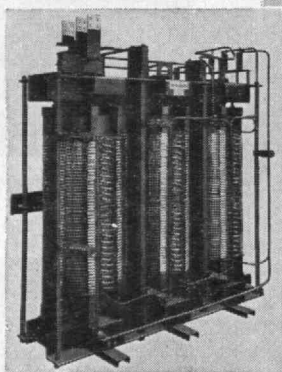


Laboratory

Dry Type
Air-Cooled

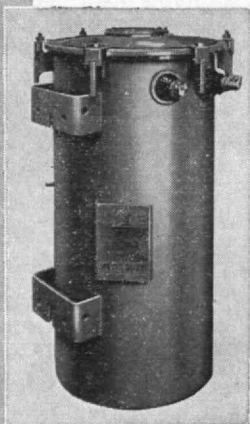
TRANSFORMERS

2 VA to
2000 KVA



Static Type

CONSTANT CURRENT REGULATORS



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MILWAUKEE 1, WISCONSIN

Harold E. Koch, '22, President

Elton E. Staples, '26, Exec. Vice President

Chester Meyer, '36, Works Manager

THE INSTITUTE GAZETTE

(Concluded from page 358)

promising students in their entrance to M.I.T. Last year 2,380 applicants from almost 1,000 secondary schools were interviewed, and 77 per cent of the entering Freshman Class was interviewed by Educational Council members.

The importance and magnitude of the task of translating technical copy was outlined by Professor Locke who stated that half of the world's scientific papers are now published in English and that this percentage is growing. The translating process can be considered in three separate steps: (1) transforming the spoken or written text into symbols; (2) translating the meaning of these symbols from one language to another; and (3) presenting the translated symbols into satisfactory written words in the second language. Computers and other modern devices appear to lend themselves to some form of machine translation. Computer mechanisms already existing or under development can handle the second step reasonably well, and they can be programmed to make a word-by-word translation, although the problem is not easy. Most computers can meet the third requirement by printing their output on tape.

Much work is being done in step one. A number of investigators in the United States and abroad are working on the problem of direct recognition of written or spoken text by a machine, not for translation but for commercial purposes. At least three companies are developing automatic check-reading machines for banks and one or more will soon be on the market.

A group of five scientists who are studying this problem at M.I.T. under the leadership of Victor H. Yngve, Assistant Professor of Modern Languages, feel that word-by-word translation is inadequate and unsatisfactory. They are endeavoring to provide a more satisfactory kind of translation in which the meanings of the words are given greater emphasis than is possible by mere word-by-word interchange. This group is now engaged in an endeavor to write rules for making the information contained in a language syntax completely explicit. They hope, thereby, to find a better linguistic basis for translation by machine through the combining of such sets of rules for two languages. German and English have been chosen for the languages to be studied first.



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"PEOPLE are the Greatest Invention Yet"

Visitor to Telephone Company exhibit says: "The man of the house came out with a new reverence for engineering. I came out with a new reverence for people."

"We went to the Telephone Company's Open House," writes Evadne Scott Beebe in the Zion-Benton News, "and saw the electronic brain playing tick-tack-toe."

"My husband was enthralled with the performance but I was watching the deft, well-groomed hands of the woman displaying the machine. She wore a wedding ring and I wondered about her home and family."

"After we listened to her little speech we went to a man in a brown business suit who told us how telephone bills are made out. Then a



MANY OTHER EXHIBITS. In addition to Open Houses at telephone companies, there are many other occasions and places where the story of the telephone is brought to you. These include fairs, lectures, moving pictures and traveling exhibits. Everyone is welcome. Bring the children, too.



INTERESTED VISITORS—Pat Haan, a telephone accounting clerk, explains billing machine to Mrs. Beebe and her husband. "I was so impressed with everything I saw," says Mrs. Beebe, "that I went right home and wrote a piece for our local newspaper." It's so human and friendly that we are reprinting it here.

clear-eyed young woman operated the machine for us. To be sure, it was an amazing gimmick, but not nearly so attractive as the girl who handled it so well.

"Outside we stopped by a truck with an 'earth auger' and other modern attachments. Explaining their uses was a big, jovial lineman."

"While we listened to an account of how fast the auger could dig a hole, I was looking at the man and thinking that here was the typical lineman, strong, alert, capable and kindly, a person who, in times of disaster, becomes a kind of unsung hero."

"My husband said, 'This is what I want to see,' as we went into the equipment building. Here we saw switches and relays, ringing machines, countless colored wires in patterns like quilt

blocks, and listened to technical explanations.

"That is, my husband listened. I watched the men as they talked so intelligently and wondered where they live, who cooks their meals and irons their shirts, what their problems are, and if they were ever in love."

EVADNE SCOTT BEEBE,
Zion-Benton (Ill.) News

There is, indeed, a lot of wonderful equipment in telephone service. But it takes more than 740,000 Bell System men and women to bring it into being and make it work. And because more people are making more use of their telephones, the number of employees is growing all the time.

"People," as Mrs. Beebe points out, "are the greatest invention yet" in the telephone business.

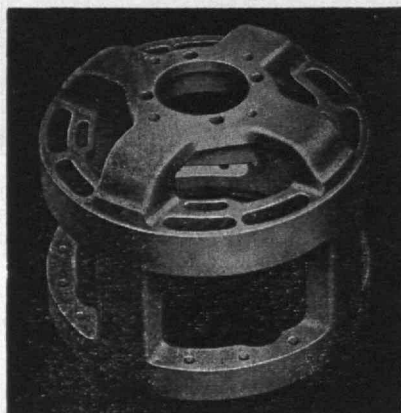
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Geo. Swift '24 Ed Beaupre '41

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REGIONAL CONFERENCE

(Concluded from page 352)

young men going into business careers today. "Our main objective," he said, "is to teach students to think."

While Dr. Stever parried most of his questioners with the formula, "I won't answer that, but . . ." Dean Brooks continued so long that the meeting was not terminated until 4:30 P.M., with many queries still unanswered. For nearly an hour thereafter, Dean Brooks conducted a seminar for 10 to 20 people, who could not seem to absorb enough of his wisdom and charm.

After a rest period, which some used for going swimming in the hotel's pool, a large reception was held in the lobby of the Ballroom. If Southern California prides itself on its friendly interchange, none could have outdone Dr. Killian, who was seen everywhere, greeting scores of old friends and making new ones.

The banquet, which extended from 7:30 until after 10:00 P.M., was under the chairmanship of William L. Stewart, Jr., '23, whose humorous difficulties with introducing the long list of honored guests at the head table were, he said, due to the "script which was provided me."

Donald W. Douglas, '14, whose presentation (page 351) followed the dinner, reminisced of the days when M.I.T. was "Boston Tech" in the Rogers Building on Boylston Street. Mr. Douglas told the story of one of his company's vice-presidents, Arthur E. Raymond, '21, who was recommended to him by their mutual alma mater as good executive material. When Douglas asked M.I.T. how to contact Raymond, the reply was, "You will find him working in your stock room."

With Lee A. Du Bridge, President of California Institute of Technology, as an honored guest, Dr. Killian keyed his speech on engineering education in such fashion as gracefully to include M.I.T.'s sister institution. President Killian detailed some of the progress which the Soviets have made in attaining a first-rate research and engineering organization, directed toward the interests of the State, and compared these figures briefly with those pertaining to our own difficulties in the same field. While Russia's obviously efficient system might speed up the germination and development of ideas, he said, our own American system is still "the right one for us." Our objective must be to clean up our educational system and remove the roadblocks impeding it. "We must not be complacent," he urged, inveighing vigorously against the prevalent secondary school habit of the "guaranteed annual pass."

President Killian mentioned an anecdote about a cellist whose wife complained that he played only one note, while his colleagues seemed to finger their strings constantly. "They are looking for a note," the musician retorted, "I've found it." Carrying this theme along, Dr. Killian gave it point in his discussion of anti-intellectualism in our schools and warned of their attitude of condescension toward hard work.

Dr. Killian, however, assured his audience that M.I.T. had been re-evaluating herself thoroughly during the past 10 years. "Now, under the strain of peak demand for technical people," he said optimistically, "the Institute is ready to do its full share toward national survival in the age of technical conquest."



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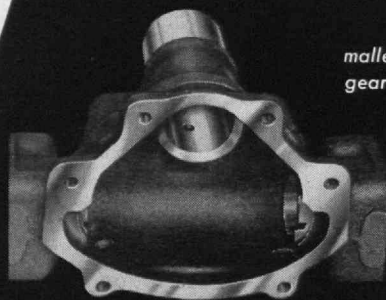
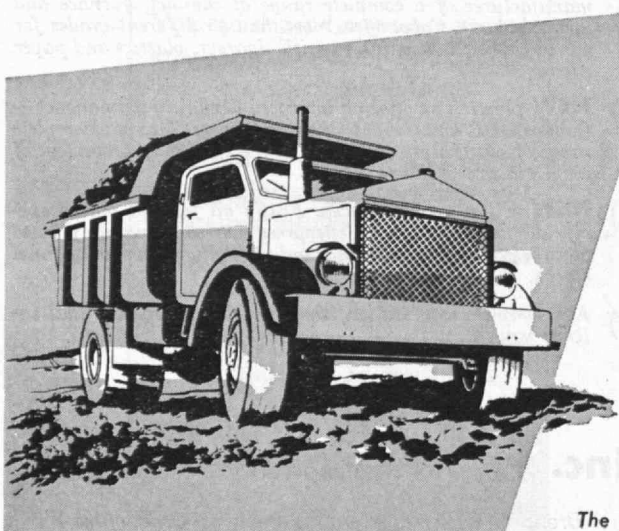


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SHORTAGE OF ENGINEERS AND SCIENTISTS

(Continued from page 350)

stance, retired engineers and scientists might well be willing to teach mathematics, physics, and chemistry in our high schools on a part-time basis if the certificate requirement for certain points of credit in educational methodology could be waived. I know many recently retired men who would be wonderful part-time teachers, drawing on their vast experience to enliven the course material with practical everyday examples. Part-time salaries, even at the present low teaching rates, would be a welcome supplement to the retirement pensions of such men. They would serve only a few years, but their service would come at the present critical phase in our problem. Retired engineers or scientists would create no additional retirement problem for the school pension system. This is a point where our educational administration could take rapid and effective remedial measures.

Third, in Bay City, Mich., there has been an important study of the practicality of using "teacher aides" to relieve teachers of those burdensome house-keeping duties which now consume somewhere between 20 and 40 per cent of teachers' time and energy. Financed by The Fund for Education, these experiments have shown remarkable results. Mothers who have college educations and whose family conditions permit have been employed part or whole time, not to teach, but to relieve the qualified teacher

(Continued on page 366)

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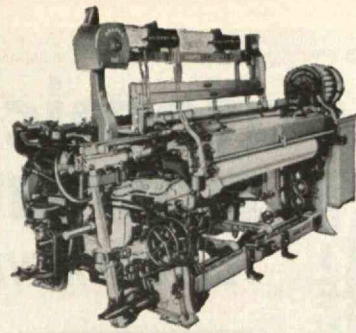
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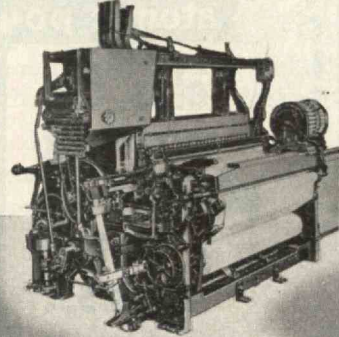
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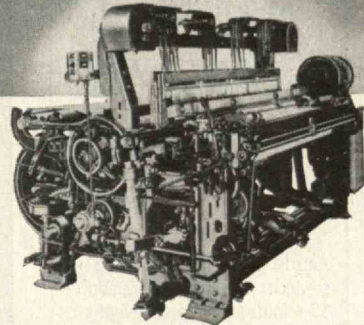
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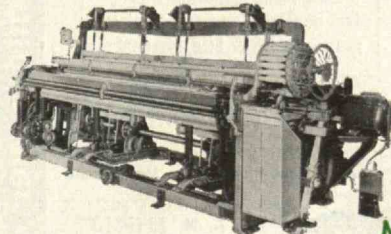
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SHORTAGE OF ENGINEERS AND SCIENTISTS

(Continued from page 364)

of nonteaching duties. When the nonteaching duties have been assumed by the "aides," the teachers are able to take on additional pedagogical loads. Just as dental hygienists have taken over many dental details formerly loaded upon the dentist, just as "grey ladies" or "nurses' aides" have relieved the hospital shortages in registered trained nurses, just as receptionists and laboratory technicians have relieved the doctors of many time-consuming duties to relieve medical shortages, just so can "teachers' aides" help to relieve the teacher shortage.

Fourth, let me remind you that some 22,000 of the 28,000 high schools of our country have less than 500 students. Students in these small town and rural high schools deserve just as effective teaching as those in the large urban high schools. But how can a principal of such a small high school find the money in his budget to engage competent teachers in mathematics, physics, and chemistry? In Ohio, under the leadership of a prominent industrial scientist, one possible method of attack has been evolved. It is an adaptation of the "circuit rider" so widely used by our churches in the frontier days. To illustrate the modern application of this method, suppose there are three small high schools within 100 miles of each other. School A spends its science teaching budget for a mathematics teacher and a teacher aide, School B for a physics teacher and an aide, and School C for a chemistry teacher and an aide. Each teacher spends successive days in a different school traveling by car, while the teacher's aide keeps the records, corrects problems, supervises home rooms, cafeteria, and the like. There are possibilities of adapting this concept to many areas.

Fifth, a vast improvement and increase is possible in the use of audio-visual instruction, either by films carefully prepared by experts, or by closed-circuit television. In either case one truly experienced teacher could conduct the lecture and demonstration instruction in many schools simultaneously, while somewhat higher qualified and trained "teachers' aides" could supervise the problem work and some classroom recitations. Audio-visual films would have high initial, but low operating, costs, while closed circuit television would have both high first cost and

(Concluded on page 368)

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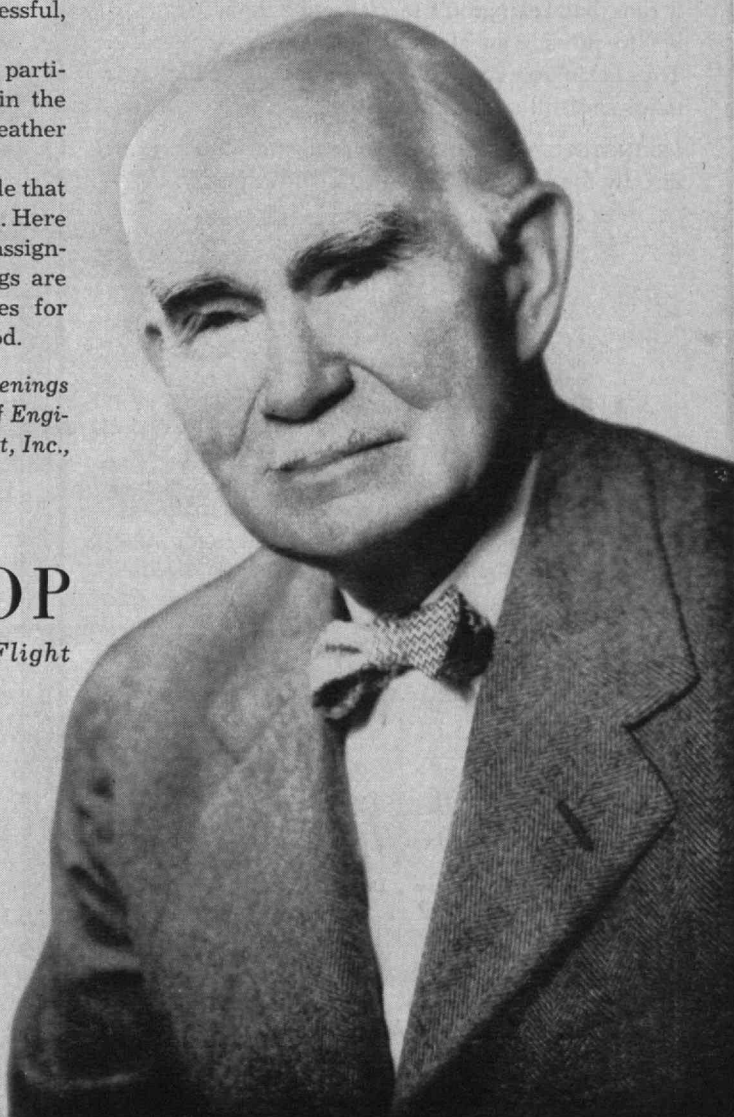
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SHORTAGE OF ENGINEERS AND SCIENTISTS

(Concluded from page 366)

high operating cost. The film instruction would tend to be inflexible, while the closed circuit television could be extremely flexible. Both would require curriculum content to be the same for all the schools served under this plan.

Conclusion

I have sketched out five possible attacks on these problems but let me state, as strongly as I can, that there will be no one, single, solution. Many M.I.T. men will have also heard of the "Lexington Plan" — originated by M.I.T. and Harvard professors living in Lexington, Mass. — and carried forward with the wholehearted financial and moral support of Arthur D. Little, Inc. Each locality will have unique problems requiring unique solutions. What works well in one place may fail miserably in another. What works well one year may lose effectiveness in another year.

But the crisis is upon us. Solutions must be found. And it is the genius of America and our Western civilization that individual free enterprise has always found some solution to every problem. Let us put our hearts and minds into finding the best solution for each locality to this industrial and educational shortage which confronts us.

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PRODUCING MORE TECHNICAL MAN POWER

(Continued from page 344)

school tax rates. They can also be done without involving unreasonable expenditures by industrial companies who might co-operate in carrying them out.

First, and most obvious, of course, is an intensified campaign to explain to high school students, at the beginning of their high school course, the attractive possibilities and the opportunity for personal satisfaction which may be found in science and engineering careers. If the young man starting high school can be persuaded that such a career is what he wants, he will not be diverted by the pressures and difficulties which stand in his way. The National Association of Manufacturers and the Engineering Manpower Commission of the Engineers Joint Council have been doing excellent work of this type, and their success is already being reflected in a gradually increasing enrollment in many of our engineering colleges. One must also say a good word for the science fairs being held in many cities through the co-operative effort of high school science teachers and local industries. There has been some fear that this type of activity might draw into science and engineering men who were not suited for this occupation, but the very difficulty of the courses would seem sufficient assurance that those who do not have

(Continued on page 372)

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NEW ENGLAND

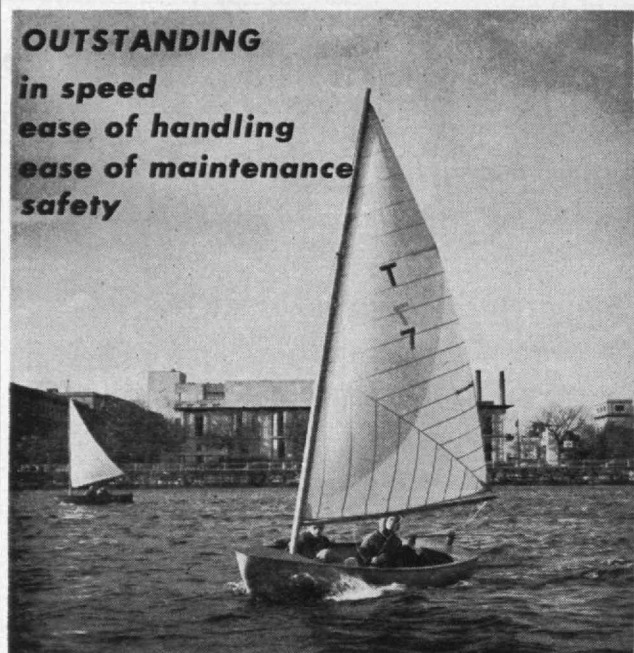
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PRODUCING MORE TECHNICAL MAN POWER

(Continued from page 370)

suitable interests and qualifications will drop off to other pursuits.

The second thing which might be done is a much more ambitious project. If we cannot provide stimulating and interesting teaching of mathematics and science in the high schools by recruiting highly qualified teachers, then we should turn our attention to revising teaching aids and practices so that these subjects can be taught in an interesting, stimulating, and effective way by men or women who do not have specialized training in these subjects. This would involve a joint effort of the very effective National Science Teachers Association, the teachers preparatory schools, and publishers of textbooks and teaching aids, working in co-operation with industrial public relations people and other industrial and entertainment people acquainted with the techniques of visual presentation. Certainly it should be possible to devise a teaching procedure for science which would be more stimulating, more interesting, and more effective than having science taught from a traditional textbook by a man who has never studied science.

This project must involve a basic change in the philosophy of teaching mathematics and science in the high schools and not simply be concerned with grafting movies and television onto the present teaching methods. In the old days, high school teaching was concerned, to a considerable extent, with training the mind. Now its emphasis has shifted to giving the student information he can use. The teaching of science and mathematics has not been readjusted to conform to this new concept. The modern high school student may be interested in how to determine the area of a circle but he has very little interest in how the formula for determining this area was developed. Our textbooks need to be revised; they should begin by emphasizing the practical usefulness of the subject being taught. Once the student's interest is aroused, he can then be led into the more abstract theoretical aspects. A project for modifying science teaching methods with the objective of making a fundamental change in approach would, of course, naturally use motion pictures, television, and other visual aids as an integral part of new teaching methods.

This joint effort should also direct attention toward some change in scholastic gradings, both for high school honors and for college admission, which will give proper relative weighting to grades secured in difficult and highly competitive courses as compared with those secured in the simpler and easier courses.

The third thing which might be done is to provide more direct incentives to increase interest in the study of mathematics and science in our high schools. In other words, we might take advantage of the good old-fashioned idea of selecting a very luscious looking carrot and then holding it close enough to the

(Continued on page 374)



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PRODUCING MORE TECHNICAL MAN POWER

(Continued from page 372)

donkey's nose so it will have some effect upon his behavior.

In its simplest and cheapest form, this might involve offering special prizes and awards for high school students doing particularly good work in mathematical and scientific subjects. The Westinghouse Electric Company, for example, is already doing an outstanding job in this connection. But the likelihood of achieving an award in the Westinghouse plan seems pretty remote to many of the people that we want to attract into the high school science courses. It might be better to provide prizes limited to the individual high schools which would involve honorable mention at the graduation exercises for those who have done outstanding work in science and mathematics along with those students who have done outstanding work in terms of general scholastic averages.

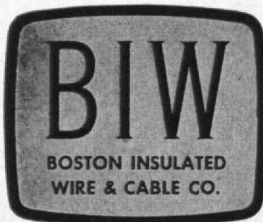
A much more direct incentive, however, would be a relatively large number of four-year undergraduate scholarships assigned to individual high schools to assist worthy students from low-income families to attend college, with the provision that they specialize in scientific or engineering fields. A proposal that industry shift some of its funds from direct support of general college activities to this more spe-

cialized approach would, of course, be greeted with no enthusiasm by college presidents. It would, however, be a way by which industry could be sure that its support of education was providing help where industry and the nation need it most. From the college's point of view, there should really be no objection to this procedure if the scholarships were accompanied by corresponding direct grants to privately endowed institutions which might be selected by the scholarship holder.

So far I have dealt primarily with the problem of seeing that a higher percentage of the young men sent from the high schools to the colleges go with an interest in, and adequate training for, scientific and engineering specialization. There is, however, of course a very considerable group of people who feel that the solution of the shortage of technically trained people is to increase over-all attendance in our colleges. It is commonly stated that 50 per cent of our best minds fail of their greatest usefulness because they are never college trained.

No one can take issue with the desirability of giving maximum training to the best minds in the country. One can, however, have considerable skepticism as to whether simply making higher education more easily available on a nonselective basis will achieve this objective. In view of the trends of student preference, one can be even more skeptical as to whether an increase in mass higher education would

(Continued on page 376)



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Fig. 1 Flexing a four-foot length of B.W. #626 low-noise cable showed only 5 millivolts with the tap at the .001 scale.

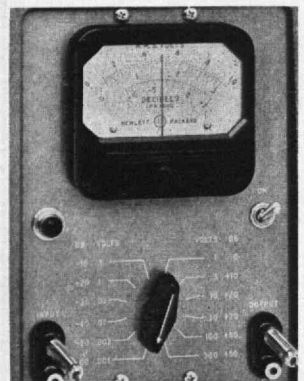
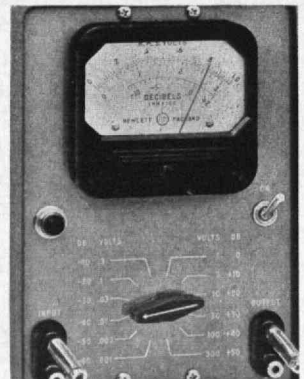
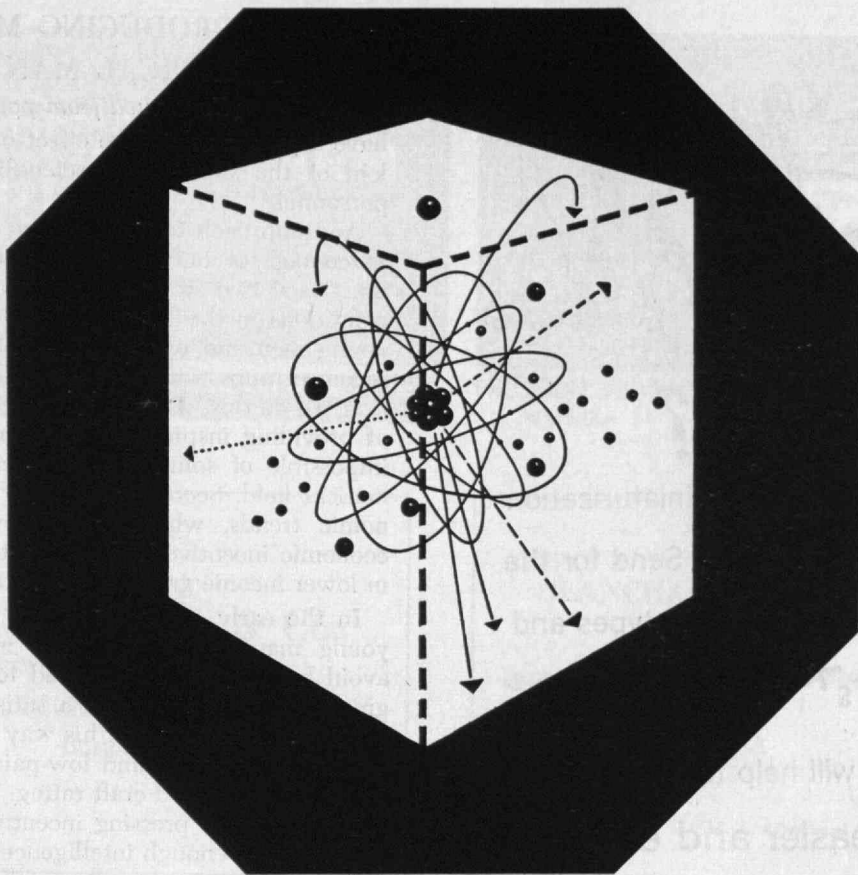


Fig. 2 A four-foot sample of ordinary wire was subjected to the same flexing and showed 8 millivolts, tapped at the .010 scale.



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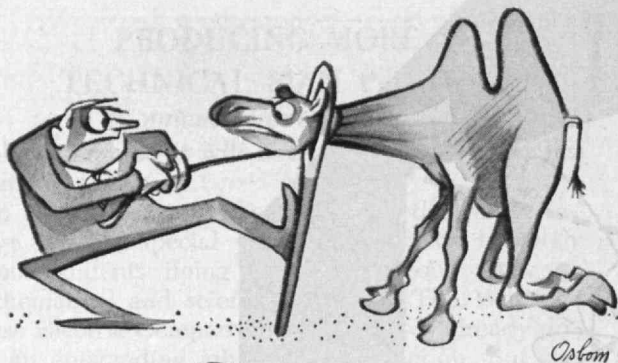
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PRODUCING MORE TECHNICAL MAN POWER

(Continued from page 374)

have a particularly large effect on the specific problem of the shortage of scientific and engineering personnel.

Any approach to the problem of getting a higher percentage of our best brains into the universities must face two situations. First, you have to create conditions in the high schools which will stimulate young men and women, particularly from the low-income groups, with a desire for learning and education. To do this, you must solve broadly the problem of providing inspirational teaching, which seems so impossible of solution in the scientific and mathematical field. Second, one must face changing economic trends, which are removing much of the economic incentive which used to make young men in lower income groups strive to attend college.

In the early 1920's, the most obvious way for a young man in a low-income industrial family to avoid hard physical labor and to escape from marginal living conditions to a satisfying living standard, was either to work his way through college or go through a trying and low-paid apprenticeship to achieve some skilled craft rating. To a very considerable extent, this pressing incentive no longer exists. No man with enough intelligence to secure a college degree needs to go to college in order to avoid earning his living by physical labor or in order to achieve a satisfying standard of living. Mechanization of industry and agriculture is largely limiting heavy physical labor to those men incapable of running machines. Ownership of a home in nice surroundings, a good automobile, paid vacations, enough money to travel, assured continuous employment, and an opportunity to educate one's children are all easily achievable without a college education.

It used to be said that, if a man did not train his brain, he had to earn his living with his muscles. He had to either think or labor. It may seem facetious, but still surprisingly true, that a highly satisfactory standard of living can now be achieved without either thinking or laboring. In our highly mechanized industrial plants, highly paid laboring men with no technical training normally perform highly repetitive operations which involve no great physical effort. It is the highly trained engineer who takes a brief case full of blueprints home to work on over the week end, and it is the scientist who spends his evening reading scientific literature, while the skilled workman living next door watches television or takes a trip to the seashore.

There is the very considerable question as to whether it is possible to attract into our universities the highly intelligent young men, from what we talk about as low-income groups, simply by making a higher education cheaper and easier to obtain.

Let us now consider for a few minutes the problem of how to insure our bright young men continuing to degrees in science or engineering even after we have gotten them to the university with adequate preparation.

(Continued on page 378)

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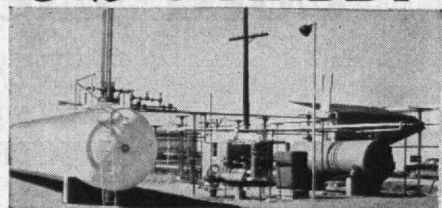
(Continued from page 376)

In the university, educational pressures very similar to those in the high schools tend to drive young men away from specialization in science and engineering. Again, scientific and engineering courses are the "tough ones." The engineers have to report early to get some of their work done before the liberal arts people arrive. Often they get less credit for a given course than do the liberal arts students because they must pack so much work into a four-year period. The science majors are almost barred from athletics and campus activities because of the long hours they must spend in the laboratories. Perhaps even more important, we have the same difficulty in providing inspiring science teaching, especially for the very large freshman classes. Too many of our potential scientists are discouraged from scientific careers by the fact that their freshman courses are difficult and not inspiring. Even our modern freshman chemistry textbooks concentrate the first freshman semester on difficult abstract conceptions of atomic structure. In too many cases, we are impressing college freshmen with the difficulty of acquiring a scientific education before we open up to them its interesting and challenging possibilities.

But, here again, there are plenty of men who have the intelligence and the perseverance to acquire

(Continued on page 380)

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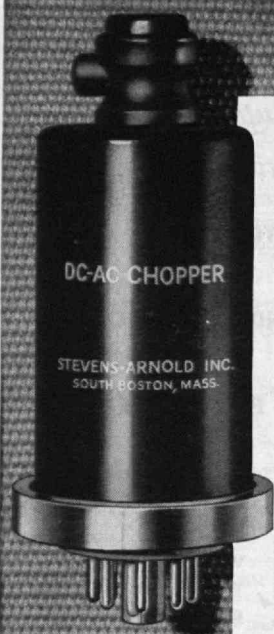


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(Continued from page 378)

technical degrees if they are convinced that the reward is great enough to justify the effort. Now, however, we are dealing with men who are thinking of rewards in much more realistic terms than scholastic prizes and scholarships.

We must face the brutal fact that, even among those going through college, science and engineering have not been of very high economic attractiveness. The laboratory scientist and engineers in industrial production were traditionally poorly paid all the way through the twenties, and thirties, and on into the forties. To be sure, the shortage of technical personnel during the past 10 years has rapidly raised the starting rate for technically trained people; but, to a very large extent, this rise in starting rate has been only partially effective in raising the salary standards of men already in industrial positions. Young men, particularly from low-income families, are likely to judge the economic attractiveness of a scientific profession by the living standard of the middle-aged plant control chemist in the factory where their fathers work rather than by starting salaries paid by research centers. In most cases, the difference between the living standard of the plant control chemist and the skilled mechanic is not sufficiently great to cause the young man to place a very high value upon a science degree. In considering the value of an engineering degree, he is most likely to explore what advantage the graduate engineers have in his father's plant in comparison with high school graduates. In most cases he is likely to find graduate engineers and upgraded skilled mechanics working side by side in industrial engineering positions with the same job classification and the same salary.

If industry hopes to persuade a very high percentage of the best brains from our low-income industrial families to strive for scientific or engineering degrees, they are going to have to put a larger and more obvious dollar value on the possession of such degrees on the part of the people who work in our industrial plants.

In most companies it is still true that the most likely route to high salaries and general management responsibility is through the sales department, rather than through the research or engineering departments. The rapid rise in the attractiveness of business administration courses to college students is probably at least partly due to the ease with which young men gain an understanding of this situation through their parents or their friends.

There is considerable reason for believing that industry supplied its needs for trained professional men during the early days of mechanization and industrial research from that class of people who went to college and took professional training because they came from family and income backgrounds which made this a more-or-less automatic educational choice. There is equal reason for believing that our 15-year-old shortage of scientists and engineers, which is now reaching its most acute stage, is due in considerable

(Concluded on page 382)

The New 1955

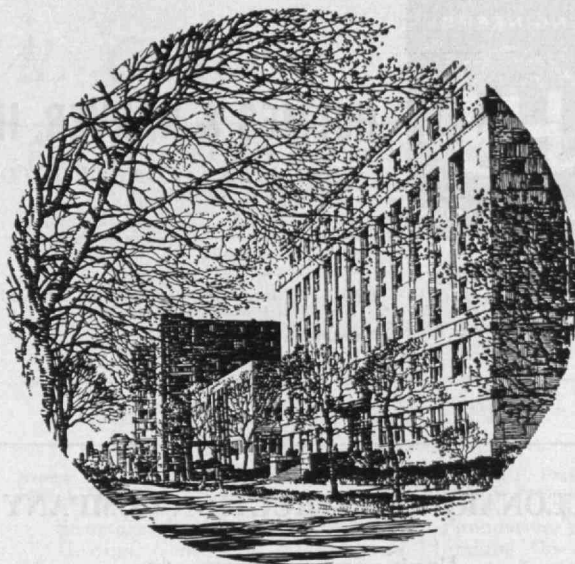
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(Concluded from page 380)

measure to the fact that industry's need for technical personnel can no longer be satisfied from this source. Now we must attract into these professions men who will only become scientists and engineers as their interest in these fields is aroused during high school days, and who can be carried through to technical degrees by incentives which make them feel justified in the special effort involved. Failing to do this, we may continue to see a higher and higher percentage of the mentalities we need in science and engineering turning instead to social sciences, business administration, and sales.

An adequate supply of scientists and engineers is essential both for our own economic welfare and for our safety in the cold technical war with Russia. We believe that our democratic system of free choice is better than Russia's dictatorship. However, in our civilization, it is often very difficult to achieve the balance of incentives which will cause a sufficient number of our people to do, of their own free will, the things which are essential for our national well-being.

The Russian system may be less effective in the long run, but it certainly has the advantage of simplicity and prompt action.

The Russians have decided that this is a scientific and mechanical age. They therefore feel it is important that their educated people have a thorough understanding of science. They are accomplishing this by the simple expedient of requiring that a considerable portion of the study time in their elementary schools be spent on science and a thorough grounding in mathematics. They specify that in their schools, which correspond to our high schools, 40 per cent of the students' time must be spent upon mathematical and scientific subjects. In Russia you cannot even achieve a high school education without a thorough grounding in the fundamentals of science.

The Russians have decided that this is a technological age in which industrial progress and national defense require a fully adequate number of trained scientists and engineers. They consider this so important that they are not content with their ability to assign students to engineering schools, and they are using the good old capitalistic technique of providing economic incentive. As a class, men with scientific and engineering degrees are the highest paid people in Russia.

Conclusion

We who pride ourselves upon our scientific and industrial leadership, need to take positive and effective steps to provide the kind of educational and economic situations which will produce an adequate number of scientists and engineers. It is equally important that we do something to counter the obvious trend in our educational system which tends in this age of science to produce an educated class which has less basic knowledge of science than the educated people of 20 years ago.

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A BOLD APPROACH TO MISSILE ELECTRONICS

a statement by DR. L. N. RIDENOUR, Director of Research, Lockheed Missile Systems Division

Electronics is central to the technology of guided missiles. Dramatic improvements in missile performance require faster, more accurate perceptions and reactions of electronic missile guidance and control systems.

Here at the Missile Systems Division of Lockheed, we are aware of this requirement. We also know that electronics is experiencing the greatest revolution in its history; the vacuum tube, hitherto the cornerstone of

electronic design, is being replaced by new solid-state devices which have superior performance and reliability.

Thus the times favor a bold approach to missile electronics. Past techniques will not meet requirements of the future. Experience in old-fashioned electronics is no great qualification for the present challenge. By giving the broadest responsibility to scientists and engineers, we are trying to lay proper emphasis on the new electronics.

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Alumni AND Officers IN THE News

Leading the Rest . . .

EARL P. STEVENSON'19 and RAYMOND STEVENS'17, respectively president and vice-president of Arthur D. Little, Inc., have been elected chairman of the board and president. Other promotions in this company include LEROY F. MAREK'30 to senior vice-president and RICHARD J. COVENEY'29 to vice-president. Mr. Stevens, who was the 51st president of the Alumni Association in 1944-1945, thus succeeds the late Arthur D. Little '85, founder of the company which bears his name, who was the 28th president of the Alumni Association in 1921-1922.

Elected by divisions of W. R. Grace and Company: T. T. MILLER'22, as president of Polymer Chemicals; BRADLEY DEWEY, JR.'40, as president of CRYOVAC; WILLIAM L. TAGGART, JR.'27 and DUNBAR L. SHANKLIN'23, respectively as executive vice-president and vice-president of Dewey and Almy.

EGER V. MURPHREE'23, President of Esso Research and Engineering Company, has been appointed, by the Secretary of Defense, as special assistant for guided missiles. For more than two decades he has been research executive for the Standard Oil Company (N. J.). Since 1947 he has been president of the Esso Research and Engineering Company, which he joined in 1934. In 1950 Mr. Murphree received the Perkin Medal, awarded by the American Section of the Society of Chemical Industry for his work in applied chemistry. He is chairman of the Permanent Council of the Fifth World Petroleum Congress to be held in the United States in 1959.

DUNCAN A. CRAWFORD'26 has been promoted to the newly created position of executive vice-president of the Atlanta Gas Light Company.

ARTHUR W. GILBART'35 and ROBERT E. BENSON'37 have been named vice-president and second vice-president, respectively, of the Equitable Life Assurance Society of the United States.

JOHN A. DOREMUS'38 has become vice-president in charge of engineering for the Aircraft Radio Corporation of New Jersey.

Receiving Honors . . .

OSCAR H. HOROVITZ'22 has recently been appointed an honorary fellow of the Institute of Amateur Cinematographers for "his services to cinematography in general and to the interests of the Institute in the U.S.A. in particular." Mr. Horovitz won two awards for his 16 mm. films in the 1955 international competition — a second prize for "Rio de Janeiro" and a commendation for "Belo Horizonte."

WILLIAM J. PLATT'41, assistant director of economics research at Stanford Research Institute has been named a fellow of the Operations Research Society

of America. The society was organized in 1952 to further the scientific methods of solving operating problems of industry and government. Mr. Platt has been a member of the group since 1953 and is associate editor of the society's journal.

HOLT ASHLEY'48, Associate Professor of Aeronautical Engineering and THOMAS HARRINGTON PIGFORD'48, Associate Professor of Chemical and Nuclear Engineering are two of ten "outstanding young men" selected by the Boston Junior Chamber of Commerce.

Directing Affairs . . .

LOUIS H. G. BOUSCAREN'04 has been elected a director of Market Facts, Inc., marketing research and counsel of Chicago. Mr. Bouscaren was formerly vice-president of Stone and Webster Engineering Corporation.

WESELEY C. L. HEMEON'26 is now the director of a new firm known as Hemeon Associates engaging in general consultation on all aspects of air pollution. The firm will be located in Pittsburgh and will retain a staff of experts in the field of air pollution; it will also have consulting associate specialists in the fields of chemistry, engineering, meteorology, plant physiology and pathology, and wind tunnel aerodynamics.

JAMES H. BREWSTER, III'40 has been appointed director of customer relations of the electronics system division of Sylvania Electric Products, Inc. Mr. Brewster is now responsible for the administration and coordination of the division's technical sales to governmental agencies and their prime contractors.

JOHN MARVIN'49 has been appointed director of the Saltsea Packing Company, Providence, R. I.

FRANCIS E. VINAL'41 will direct research work on ferrites at an Advanced Development Laboratory being established by the Radio Corporation at Needham, Mass. After World War II, Dr. Vinal was assistant professor of Ceramics at M.I.T. and from 1952 to 1955 was associated with the Institute's Lincoln Laboratories.

Saluting the Authors . . .

WILLIAM S. LALONDE, JR.'23; *Professional Engineers' Examination Questions and Answers*, published by the McGraw-Hill Book Company, New York.

ROBERT V. BRUCE'44; *Lincoln and the Tools of War*, published by the Bobbs-Merrill Company, Indianapolis.

Obituary

WALTER RENTON INCALLS'86, February 2
WILLIAM S. HADAWAY'87, April 12, 1953

JOHN E. MAY'89, Date Unknown
HAROLD B. ROBERTS'90, January 1
LEIGHTON CALKINS'93, December 28, 1955

LAURENCE J. WEBSTER'93, January 25°
HENRY F. COPELAND'94, January 26
HERBERT E. JOHNSON'94, December 7, 1954°

EVERELL S. SWEET'95, February 3°
WILFRED BANCROFT'97, December 18, 1955

WALTER F. BUCK'97, January 3°
ELLIOTT R. BARKER'98, January 10
HARVEY L. CURRIER'98, October 11, 1955
A. WALLACE MCCREA'99, Date Unknown
JOSEPH T. MAGUIRE'00, December 16, 1955°

FRED B. WILDER'00, February 2
ARTHUR W. PAYNE'01, February 5
LESLIE W. MILLAR'02, April 4, 1955
JAMES A. CUSHMAN'03, March 3°
RICHARD M. FIELD'03, Date Unknown
RAYMOND E. BELL'05, January 23°
WILLIAM A. CLARK'05, February 18
CLARKE E. WARREN'05, March 10
MARDEN W. HAYWARD'06, February 4°
RAY J. BARBER'06, October 28, 1955
HERBERT P. HOLLNAGEL'06, February 23
ALEXANDER MACOMBER'07, March 14°
HENRY C. PATTEN'08, February°
CHAUNCEY H. CRAWFORD'09, May 9, 1955°

HARRY L. HAVENS'09, January 23
CHESTER HENRY POPE'09, March 6°
JOHN S. LONG'10, July 17, 1955
J. STUART SNEDDON'10, December 14, 1955

JOHN S. WOOD, JR.'10, June 1955
WALTER D. ALLEN'11, February 28°
RALPH W. BIERER'11, December 29, 1955°

HENRY S. DAVIS'11, July 26, 1955
LELAND D. WOOD, March 20
LAWRENCE H. MATHEWS'13, February 10
ERNEST M. BOYD'14, November 23, 1955
WILLIAM GRANT'14, October 14, 1955
JAMES ISAACS'14, February 17°
JOHN W. CONOVER'15, November 15, 1955

OLIVER G. NORTON'15, November 4, 1955
ARTHUR L. GUPTILL'16, February 28°
WILLIAM T. KNIESNER'16, March 2°
HAROLD A. KNAPP'17, January 19
GRENVILLE L. HANCOCK'18, January°
CLAUDE O. KELL'20, Summer of 1955
ROBERT D. FAIRBANKS'21, December 25, 1955°

NORMAN W. HUNTER'21, October 14, 1955°

J. LINCOLN DODSON'22, October 7, 1955°
WILLIAM T. HAEBLER'22, February 6
HOMER DUGGAN'25, February
RICHARD M. WICK'25, Date Unknown°
ROBERT H. BAKER'33, February 6
WILLIAM C. MILLER, JR.'33, January 31
MAX NEUHAUS'33, October, 1955
RICHARD M. SIEG'38, December 1, 1955
HENRY PAIGE'49, October 5, 1955
THORKEL M. W. HAALAND'54, January 15

° Further information in Class Notes

News FROM THE Clubs AND Classes

CLUB NOTES

Cincinnati

Professor and Mrs. Erwin H. Schell'12 were the St. Valentine's Day guests of the Technology Alumni of Cincinnati and their wives at a dinner meeting held at the Maketewah Country Club. The Schells, who were house guests of Oliver L. Bardes'21 during their visit to our city, succeeded in bringing us up-to-date on the latest happenings at the Institute. In doing so they also brought a touch of the graciousness that many of us have known during pleasant visits to their home. It is no surprise that M.I.T. Clubs across the country have enjoyed having them as guests.

In addition to speaking on the "Growth at M.I.T.," Professor Schell showed the color film on SAGE (Semi-Automatic Ground Environment) which was developed at M.I.T.'s Project Lincoln at Lexington, Mass. Those in attendance enjoyed a most rewarding evening. — **GERALD S. BURNS, Secretary**, 2529 Bell Place, Cincinnati 6, Ohio.

Great Britain

The M.I.T. Club of Great Britain held three successful dinner-meetings during the year 1955 with a good proportion of the Club members in attendance. The meetings represent a wide range of Classes, and we are always glad to welcome new members from various parts of the world. We invariably hold one dinner-meeting to which ladies are invited, and at least one is arranged to coincide with the visit to London of an eminent visitor from Cambridge. The Secretary, Professor D. N. deG. Allen, is always pleased to hear of the arrival in England of Alumni of M.I.T. whom he would like to contact on their arrival, and he would also like to be informed of the existence in this country of anyone with whom he has not yet got in touch. The Club maintains a steady average number of members, partly residents in this country, and partly people who spend a shorter period in Great Britain, and thus maintains close contact with recent events at M.I.T. The membership fee is a nominal one of 7/6 per annum. All correspondence should be addressed to the undersigned. — **D. N. deG. ALLEN, Secretary**, Imperial College, Prince Consort Road, London, S. W. 7.

Hawaii

The M.I.T. Club of Hawaii held a dinner meeting at the Pacific Club in Honolulu on March 7. The Pacific Club is said to be the oldest private club west of the Mississippi. Mr. and Mrs. Langdon Pearse were the honored guests. Mr. Pearse of the Class of '01 is the sanitary engineer of the Sanitary District of Chicago. During 47 years of continuous service there he

has been responsible for a major part in the growth of one of the world's largest successful sewage projects. It provides safe, sanitary living for some four million people, and an unpolluted water front along the Lake Michigan shore. After dinner he gave a most interesting account of the problems and growth of this \$350,000,000 investment in health by the city of Chicago. Walter T. Spalding'10, President of the Club reported on his 45th Reunion at Chatham and on the full Alumni Day events of last June. — **W. T. SPALDING, President**, 77 Merchant St., Honolulu, Hawaii.

Lehigh Valley

A highly interesting and instructive meeting was enjoyed by 32 members of the M.I.T. Club of the Lehigh Valley at the Allentown Plant of Western Electric Company.

Following an excellent dinner and a brief business meeting talks by Ted Acker'24 and J. J. Stancavage explained the planning, building, and operation of this large electronics plant. Mr. A. W. Pond demonstrated possible future uses of transistors and thermistors, such as the use of transistors in miniature radio transmitters and receiving sets.

A well organized plant tour followed the talks after which the group returned to a meeting room for a question and answer period.

Those present were: Steve Muther'34, Howard M. Cyr'18, Lawrence Garthe'52, C. T. Chu'22, Bob Loss'22, Wallace McGahan'47, Floyd M. Fuller'06, George J. Meyers, Jr.'29, W. M. Post, Jr.'36, C. W. Gotherman'13, M. V. McMurphy'38, Stanley Partel'55, B. V. Reeves'12, A. C. Zettlemoyer'41, A. Butts'13, M. S. Blake'25, J. T. Acker'24, J. P. Brosnahan'35, J. F. Stengel'50, Wm. V. Bassett'39, W. K. Adams'47, Edward Adams Richardson'19, Roy W. Prince'40, George P. Conard'52, James V. D. Eppes'50, Henry T. Lyons'27, M. V. Herasimchuk'39, H. Moggio'28, D. W. Blickwede'48, Hugh S. Graham'47, Joe Libsch'40, Dick MacPhaul'40. — **JOHN M. SMYSER, Secretary**, R. D. #4, Bethlehem, Pa.

Monterrey

Special occasions for the Club are the annual visits that H. E. Lobdell has been making with some distinguished visitors from the faculty of M.I.T. and the Alumni Association. The one for this year was planned for March 6, with the attendance of Mr. and Mrs. Lobdell as well as Mr. and Mrs. T. Miller. Unfortunately, flight accommodations were not available as expected and the Club's dinner had to be cancelled. However, on March 7, Messrs. Miller and Lobdell made a personal visit to the Instituto Tecnológico de Monterrey upon the request of Ing. Bravo Ahuja, Rector of the Instituto, who afterwards invited them to lunch, accompanied by several members of the faculty and sev-

eral Alumni. In the evening Rodolfo Gonzalez Garza'34 offered a cocktail for Messrs. Miller and Lobdell. The following group of Alumni were present: Roberto Garza Sada'18, Juan Celada'44, Julio de la Fuente'33, Camilo G. Sada'32, Eliot Camarena'44, and Rodolfo Gonzalez Garza'34 with their wives. — **ELIOT CAMARENA, Secretary**, Sucursal "J", Monterrey, N.L., Mexico.

New York

Alumni of Westchester

The annual golf outing of the M.I.T. Club of New York will be held at the Scarsdale Golf Club on Tuesday, June 5. All Technology men and women are invited to participate; and all guests, friends and business associates are welcome.

Tee-off times for foursomes are available from 11 a.m. through the early afternoon. The Scarsdale Club also offers facilities for tennis and swimming for those wishing to do so. Arrangements have been made for playing bridge. The bar will be open throughout the day. Dinner will be served at 7 p.m. with a lively evening of entertainment planned in conjunction with the dinner.

The golf outing is being sponsored by the M.I.T. Alumni of Westchester; Eugene R. Smoley'19 is serving as chairman of the affair. Other committee members are: David V. Buchanan'31, J. Gordon Collins'28, Thomas F. Creamer'40, Edward S. Goodridge'33, and Arthur Smith'18. Reservations may be made by contacting either Eugene Smoley of the Lumus Company or Joe Conrad of the M.I.T. Club of New York. Announcements will be mailed in the middle of May to all Club members. — **JOHN E. PLANTINGA, Secretary**, 57 Center Rd., Old Greenwich, Conn.

Rochester

The last meeting of our Club was held Wednesday, March 7, at which time approximately 30 of our members had the opportunity of visiting the main plant of the General Railway Signal Company. This visit was made possible by Al Dasburg'36, a transportation research engineer with his company. Also assisting in guiding us through the plant and facilities were the following M.I.T. graduates employed at General Railway Signal: E. A. Basilio'28, J. E. Freehafer'37, R. M. Phinney'04. The trip was of great interest to all, and indicated the entrance of electronics into the field of railway signalling and control. New methods of freight car classification-yard automation—and centralized train control were exhibited and described to the group. We were shown how, by means of centralized train control, the New York Central was able to cut back from four to two track operation on its 163 miles of main line between Buffalo and Cleveland, and still give better and more efficient service between these two cities.

Our Club is also busy at the present time with the Alumni Fund solicitation campaign. We were one of four Clubs in the nation chosen last year to initiate this follow-up campaign at the local level, and were again asked to participate this year. Some 30 of our members, under the chairmanship of V. N. Hansford '37, President-elect of the Club, are following up on Alumni who have to date, failed to respond to the Alumni Fund drive. — J. K. LITTWITZ, *Secretary*, 191 Rogers Parkway, Rochester, N.Y.

Schenectady

Our annual dinner meeting proved successful and entertaining. J. P. Den Hartog honored us with a double theme talk. We were brought up-to-date with the latest thinking at Tech, particularly in line with the teaching objectives, and he also recounted his trip to Japan as a Fulbright Exchange Professor. Professor H. Bibber did the honors for the evening. The guest list included Admiral Leggett of Alco Products, Messrs. Sheels and Nerad of General Electric, and their wives. The members present were B. S. Angell'43, E. R. Barriere, F. F. Buckland, H. H. Dow'35, J. H. Germer'44, W. B. Giles'50, H. J. Humphrey'49, A. P. Kellogg'24, Dr. G. M. Ketchum'41, W. A. Kitts'22, E. S. Lawrence'47, J. F. Lucey'29, J. H. Macleod'41, D. H. Marquis, R. L. Mathews'50, M. R. McGuire'41, L. G. Peterson'36, Dr. R. Plunkett'39, O. R. Shurig'11, H. Stern'50, J. C. Westmoreland'54, B. Wilbur'32, R. E. Wilson'45, and B. Zaxman. Nearly all of the wives and several other guests were also present.

Recent luncheon meetings have included a talk on the latest in automation at General Electric by Addison E. Wiles, acting manager of equipment development section; and "Problems of Mechanical Analysis in Reactor Technology" by Dr. Gabriel Horvay, Research Associate of General Electric's Research Laboratory.

We are happy to welcome two new members to the local gathering, F. Paul de Mello and Milton McGuire. Paul arrived from Sao Paulo, Brazil, and Milton was former Secretary from the New York area. We hope that other new members in this area will try out our meetings — interest guaranteed. — W. B. GILES, *Secretary*, Netherlands Village, Wemple #9, Schenectady 8, N.Y.

Thames

On February 16, 1956 a new M.I.T. Club got under way in the New London, Conn. area under the name of the M.I.T. Club of the Thames. Thirty M.I.T. men were present at a dinner meeting at the Trade Winds in New London.

Mr. Donald P. Severance, Secretary-Treasurer of the M.I.T. Alumni Association welcomed the Club and explained the role of the Alumni Club in the community. W. Van Alan Clark, Jr. Associate Professor of Industrial Management at the Institute, delivered the principal address entitled "Industrial Management and New Areas of Technology." This was followed by a stimulating discussion led by Professor Clark. Howard Levinston'51 and George Siefert'51 presided over the meeting.

Plans have been made to hold one other meeting this season and this will be held

in May. The season beginning in the fall of 1956 will be the first complete season and a slate of officers will be presented at that time. All M.I.T. Alumni within a 25 mile radius of New London, Conn. are invited to participate in the activities and work with the committee. — HOWARD LEVINSTON, *Secretary*, General Dynamics Corporation, Groton, Conn.

CLASS NOTES

• 1890 •

On the day before Christmas our assistant Secretary Charles Sherman, received a Christmas card from Martin Southworth of Chicago with the notation: "Please pass my greetings to the members of my Class, VI'90." It was addressed to him as Secretary of the Class. Charles also called our attention to a probate notice which made it possible to get the following information from Mr. F. Alexander Magoun concerning his mother, our Classmate Mrs. Herbert W. Magoun, nee Martha R. Mann: "Mother died in her sleep on All Saints Day (Nov. 1). She had not been ill. She was 94 years old last June. She graduated from Wellesley, Class of '85 and did graduate work in biology under Sedgwick at M.I.T. Subsequently she taught botany and biology at Colorado College where she met and married the young Latin professor. Her principal claim to fame was discovering and identifying a new kind of moss which the famous Professor Gray of Harvard named after her. She is survived by her husband, Herbert W. Magoun of Belmont who will be 100 years old in February, three children, Mrs. Charles S. Gillett of Matsugama, Japan, whose husband is president of a junior college for girls there, F. Alexander Magoun, long of the M.I.T. faculty, now retired but still active, and Dr. Harold J. Magoun of Denver. Incredible as it seems she took care of father and a ten-room house alone for 14 years after she had broken a hip at age 80." — GEORGE A. PACKARD, *Secretary*, 25 Avon St., Wakefield, Mass. CHARLES W. SHERMAN, *Assistant Secretary*, 16 Myrtle St., Belmont, Mass.

• 1891 •

Our Secretaries seem to have a lot of hard luck. Frank Howard had a leg amputated some time ago and I understand is practicing with an artificial leg and I hope he will be present at our 65th Reunion at the Country Club on June 9. Gorham Dana writes me that he cannot continue as Secretary on account of ill health, so I passed the job on to Channing Brown our only minister, who should be able to write us a few sermons on the errors of our ways, who finally accepted but read his letter below. "Early last September I was hit by an automobile while crossing Route 2, not 500 yards from my own home. A fractured hip, scalp with long deep cut and many bruises and scars sent me to the hospital for nine weeks. No visitors and for two weeks nobody was laying a bet that I would pull through. When my daughter drove me over to Hastings I could not stand without helping hand, could not

write except sign my own name. Have made wonderful progress to date though it has taken grit to do it. I walk three to four miles each morning. Today through two inches of snow. But I use two canes to do it.

"This long tale is to show you I am in no fit condition to say yes to your request. I'm like Barny Capen, sort of semi-invalid. I have given up everything involving obligations — town clerk, after 25 years of service, church and all. I suppose this is my home from now on, mostly. The reason is a wonderful affectionate daughter. She is on the Board of Education in Hastings, no small job on the doorstep of Columbia University. She is also the mainstay in carrying on her husband's New York business — he died last April. I hope to be with you and the rest on June 9."

A letter to Gorham from Robert Ball was received in February which reads: "We were much interested in your account of Brook Farm in the Review. I cannot remember the house, perhaps it was not then made conspicuous by a notice board. I wonder if you remember Professor Morse who lived at Salem. He was a great collector. When I knew him he was retired but was always absorbed in research, much of which he used in lectures.

"We seldom have a real freeze-up but at present we are just recovering from one. Plumbers in England are not given to protecting the piping system against frost for they lose custom thereby even though the severe frosts are infrequent! But when they do come, the call on them is overwhelming."

And here is another letter I received in January from Ball which reads: "You are to be thanked by the surviving members of '91 for keeping the remnant in touch through the medium of the Tech paper. The arrangement of classes is a great improvement on anything of the kind here. As you perhaps know, Cambridge University is a collection of some 17 colleges, each with an almost complete independence and anything like a comprehensive catalogue is impossible, though there is a University annual which necessarily cannot give particulars, and has no parallel with your system of classification which is so efficient. Hence I look to the arrangements by classes as set forth in the Tech paper. There is a great crusade here to supply more young men trained in science and technology as there are not enough to cover requirements in industry. I hope you and your family are well."

It would be nice if all you fellows located around the country would take a few minutes to write to Channing Brown, 15 Forest Ave., Hastings on Hudson, N.Y. and tell him something about yourselves. He is going to need your help.

Please keep June 9 in mind. That's the date of the 65th Class Reunion. It will be held at The Country Club in Brookline, Mass. According to my records there are 37 members still living. — HARRY H. YOUNG, *President*, 192 Commonwealth Ave., Boston, Mass.

• 1893 •

On March 7, (a week before Class Notes were due for the May issue of The Review) we received a clipping from the Laconia, N.H. *Citizen*, through the Alumni Office,

advising us that Laurence J. Webster had passed away at his home on January 25, 1956. Laurence Webster, a retired engineer of Stone and Webster Inc., became active in the conservation of wild life in New Hampshire, when illness forced his retirement in 1899 to his home in Holderness. While a resident there — he and his wife built many bird sanctuaries and succeeded in attracting a flock of some 200 ruby-throated humming birds to his estate. His bird taming made possible high speed photographs by Dr. Harold Edkerton of M.I.T. and the moving pictures enable ornithologists to make comprehensive studies of the birds. His first wife Alyce Rogers of Newton, died in 1938 and several years later he married Mrs. Edith Rogers Holden of New York City, who survives him. He also leaves a son by his first wife, Frank G. Webster, five grandchildren and four great grandchildren. — **GEORGE B. GLIDDEN, Secretary**; **GERTRUDE B. CURRIE, Assistant Secretary**, c/o Fay, Spofford and Thorndike, 11 Beacon Street, Boston 8, Mass.

• 1894 •

The only really sad part of a Class Secretary's post is the necessity to report from time to time on the invasion of the Class ranks by death or misfortune. This becomes too frequent when classes have entered upon the second half century of Alumni life. Although most of the men have retired by that time, it would still be of great interest if they would volunteer items of news about themselves or their families, activities, travels, etc. for these would greatly interest their former fellow Class members. I urge all members of our own or of other classes to assist the Secretaries in this way.

It is with much regret that this Secretary has to report the much belated news of the death of Herbert Edward Johnson which occurred at the General Hospital at Riverside, Calif., on December 7, 1954, but was only recently reported by his attorney. Johnson joined our Class in the Sophomore year, coming from Oberlin, Ohio, and entering the course in Electrical Engineering. He was thus with us for three years, but was not active in Class affairs or widely known outside that department. After graduation he entered the employ of the Nassau Electric Railway Company in Brooklyn, but how long he remained with that company is not known. He later became associated with the Traders Insurance Company of Dallas, Texas, and was for several years a special agent for that company. During the period from 1930 to 1940, and possibly before and after these dates, he was engaged in ranching at Norco, Calif., and thereafter he retired to Corona, Calif. He resided there for about ten years previous to his death in 1954. It has been reported that a surviving sister lives at 504 W. Sixth St., Cisco, Texas, but there is no other information relative to his family. — **S. C. PRESCOTT, Secretary**, Room 16-317, M.I.T., Cambridge 39, Mass.

• 1895 •

There is an old saying — "Our only value in this life lies in what we do for others." This is superbly exemplified by our Classmate, Alfred P. Sloan, Jr. thru

his wonderful financial support and personal interests in the welfare of Technology. We are proud that he is a member of the Class of 1895. We regretfully report of the passing of Everell Shipley Sweet, Course V, on February 3, 1956. His latest residence was 1116 Washington Street, S. Braintree, Mass. — **LUTHER K. YODER, Secretary**, 69 Pleasant Street, Ayer, Mass.

• 1896 •

We in New England are just emerging (March 10) from the worst ice storm of the year. In an overall survey the weather men call it one of the most devastating winters in 50 years. Losses from floods and hurricanes have been in the millions, and the reconstruction costs including new surveys for dams will add millions more. The above comments remind us of how important Hyde, Leighton, McAlpine and others have been in their fundamental studies and reports on "soil conservation" and "flood control." We eagerly await biographical news from our Classmates if we are to keep the Class informed of passing events. The consensus of opinion to date indicates that our Class Reunion will be limited to the Alumni luncheon to be held in Rockwell Cage. This following article from the Washington, D.C. *Star* entitled "Jameson Memorial Exhibition" has just reached us. Our Classmate, Minor S. Jameson passed away May 20, 1955. "The value of painting is its contribution to the beauty of the world and the joy of creating for the artist." These words, taken from Minor S. Jameson's 'Notes on Painting' apply in every respect to his own paintings, more than 30 of which compose a memorial exhibition at the Arts Club.

"Modernists as well as traditionalists have paid tribute to the technical excellence of Mr. Jameson's paintings. But what enchants the general public is their beauty.

"Mr. Jameson's color is so faithful to that of the scenes he depicted, it seems quiet if not over-reticent to eyes accustomed to the raw primary colors of some modern landscapists. Yet Mr. Jameson's color is fresh and bright in the red barns and lush summer foliage; delicate and highkeyed in his idylls of spring; warmly glowing in his autumnal scenes, and almost monochromatic in some of his transcriptions of the hush of winter. He loved far-reaching landscapes, and achieved the feeling of distance by the use of successive planes, as in Chinese painting."

Following is a letter from Victor Shaw. "It has been some time since you've heard from me, back on our 80th birthdays, it seems to me, and now I'm in my 84th year and am writing again chiefly to apprise you of my change of address, but also to send you a "get well fast" note; for I see by my February Review that you are under a doctor's care for some respiratory infection that surely doesn't sound so good to me.

"I am, myself, recently out of a local hospital, reputedly for an attack of TB. However, I'm rather doubtful of that diagnosis, and think it may have been merely a pleurisy attack. This, because although I was kept in the hospital for nearly a year, I made a record for what they term 'negatives', of which I had eleven on physical tests.

"This is the only time for me in any such institution, and am hoping it will be the last also. Am supposed to have picked up the TB germs when I came down here from Alaska back in 1938; but, never had a cough, and my lungs always have been okay, with a five-inch expansion when I was mining in the Colorado high country.

"Now with regard to my change of address; I still am in the California mountain country, for I've always been a mountain man; preferring the hills to the alternative desert country with its cactus, heat, and poison critters. My new address is: Box 116, Frazier Park, Calif." — **JOHN A. ROCKWELL, Secretary**, 24 Garden St., Cambridge, Mass. **FREDERIC W. DAMON, Assistant Secretary**, Commander Hotel, Cambridge, Mass.

• 1897 •

Having returned from a short trip to Florida much earlier than originally planned and it being a mild evening for February, we attended the Alumni council meeting at the M.I.T. Faculty Club on February 27. After celebrating the 95th birthday of Godfrey L. Cabot by an interesting talk by Horace Ford telling of Mr. Cabot's manifold activities in business and aeronautics and philanthropy, we listened to a talk by two quarterbacks. One, from Stanford University, who is now the Director of Athletics at M.I.T. outlined his future plans for which he incidentally mentioned he hoped in spite of the million dollar bequest by young Mr. duPont that a like amount or more should eventually be raised. The second, who had been a quarterback at Nebraska University but who now is the chief engineer in the design of the proposed nuclear reactor for M.I.T., described in detail the construction and operation of the proposed equipment. Most of the interesting description was miles over our head as we are not well acquainted with neutrons and gamma rays. He also explained that the money so far available for the construction of the reactor was insufficient and a large additional sum would be required for completion.

We are again indebted to Proctor Dougherty for a clipping from the February 6 issue of *Washington Post and Times Herald* giving the history of the University Club of Washington, D.C. It now has an imposing club house at 1135 16th Street N.W. with swimming pool, athletic facilities, turkish baths, etc. Proctor has been a member since its inception. In fact, he was the head of a committee which organized the club in 1904. At that time William Howard Taft was elected the first president of the club. At that time, of course, Theodore Roosevelt was the occupant of the White House. Incidentally, an excellent photograph is shown of Proctor surrounded by members of the present Board of Governors and the Chairman of the Executive Committee is shown pinning a decoration on the lapel of Proctor's coat. Its membership includes representatives from universities all over the world which in times of national emergency in the past has proven somewhat awkward.

Many will remember Walter French Buck for although he remained at M.I.T. only during our freshman year, he retained his interest in the Class and occa-

sionally attended a Reunion. Later as an undergraduate at the University of New Hampshire he was an all-around athlete and after graduation from that institution in addition to teaching he was a successful football coach at Pawtucket, R. I., and Brockton, Mass., High Schools and at Rollins College, Winter Park, Fla. The following is from the Boston *Herald* of January 4, 1956:

"Walter French Buck, former Brookline resident and retired teacher, investment broker and engineer, died yesterday on his 80th birthday in a Boston hospital. Mr. Buck formerly was an instructor at Milton Academy, dean and mathematics professor at Rollins College, Florida, former head of the mathematics department at Brockton High School for 11 years and mathematics department head for several years in the Pawtucket, R. I., high school, where he also coached football. During the first world war, he was in production engineering in manufacture of fuses for the French 75 m.m. cannon. He was also in the investment field with various firms in this area. Mr. Buck, a native of Manchester, N.H., attended M.I.T. and transferred to the University of New Hampshire, graduating in 1897. Prior to retiring in 1954, he worked in research for the Raytheon Manufacturing Company, Waltham. He was a member of the Leyden Congregational Church, Brookline. He leaves his wife, the former Grace Louise Bicknell, and a sister, Miss Helen I. Buck of New York City."

A letter from his sister, Miss Helen I. Buck, 615 E. 14th Street, states that Walter wrote of his wife as follows: "Throughout all the trials and tribulations of living, Grace, with her sound sense, delightful humor and buoyant disposition, has been a constant and living inspiration to me and others." — JOHN P. ILSLEY, *Secretary Pro-tem*, 26 Columbine Road, Milton 87, Mass.

• 1998 •

There will be a '98 Get-Together in the afternoon of Alumni Day, June 11, 1956, which, through the courtesy and generosity of our Classmate, George Cottle, will be held at The Algonquin Club of Boston. Does this not bring up to the Class the remembrance of many happy gatherings at the Algonquin Club?

Alumni Day, '56, promises to be novel and outstanding in many features. We were present at The Alumni Council meeting, January 23, when Donald Kitchin '19, Chairman of the '56 Alumni Day Committee made a preliminary report. The plans call for holding all gatherings, — meetings, lunch, dinner, etc., for the whole Alumni body and guests at M.I.T. in Cambridge; one evening banquet for men and women, instead of two as formerly, to be held in Rockwell Cage, — it should be a mammoth gathering; and finally at the evening banquet a program of entertainment instead of serious speeches as formerly. The serious speeches will be held in the morning; and President Killian's report given at the luncheon in the Great Court. Then, in the afternoon, Class Get-Together. So, you boys and girls of '98, just hitch up the old gray mare, with bells (or run out that new Cadillac) and come right along!

Now to continue the responses to Class Letter #16, David C. Fenner, Course II, 288 Elm Road, Falmouth, Mass.: "That's right, put me in the 'Retired' Category and make it twice. Once in 1950 and a second time in 1953. Am still doing a little writing. Managed to get to New Haven to see Yale down Harvard in a game of 'snow ball.' (Dave graduated from Yale in 1896 before he came to M.I.T. — Ed.) Am still hoping to get to New Haven again in June for my 60th. Happy and Prosperous 1956, Dan, and best to all the boys in M.I.T. '98."

Abram French, Course I, 646 Humphrey St., Swampscott, Mass.: "The work which takes most of my time is in the nature of a general service of the grounds of suburban homes. Sometimes it is a lawn which needs renewing or a septic tank or a drain which is plugged or else snow has to be plowed off the driveway. With the jobs lasting only a few days, there is quite a variety of work and the men have to do something different each day. With best wishes for a Happy New Year."

Lester D. Gardner, Course IX, Retired, 875 West End Ave., New York 25, New York: "We all owe a great debt of gratitude to Dan Edgerly for all the hours he spends keeping track of all the good old Class of '98 and keeping us informed statistically of our longevity." So say we all of us!

Frederic A. Jones, Course I, 286 Chestnut Hill Ave., Brighton, Mass.: "You might supplement my record as follows: — (a) Retired Office Engineer, — Boston and Albany R.R., (b) Activities are principally genealogical and include research into the history of my earliest ancestors in this country."

Lyman F. Hewins, Course VIII, 1306 Gallatin St., N.W., Washington, D.C.: "Retirement effective 1/1/1943; 13 years. Navy Department still thriving without me! Presented with Life Membership Capital Yacht Club in 1954 'in honor of 50 years active membership.' Boat now winterized so will be off to Florida come Christmas week. Summers often spent at Orleans, Mass., and in between sail the beautiful Chesapeake Bay Country. Nothing like it." (Hewins and Byam ought to stage a match for us on the beautiful Charles River, at our 60th. How about it? Ed.)

Arthur Samuel Keene, Course IV. "Business address: 15 West 10th Street, Kansas City 5, Mo. Home Address: 1211 W. 68 Terrace, Kansas City 13, Mo. Continue going to the office, weather permitting. Short hours. 5 day week. Am passing responsibility to partners. Have slowed down but am doing well."

Edmund C. Little, Course IV, 6818 Washington Ave., St. Louis 5, Mo. "Somehow find it impossible to put down, in writing, what I may have created or accomplished in my profession. Yes, I am retired and travels, reading and my friends brighten the last span."

Edward N. Milliken, Course VIII, 303 County Street, New Bedford, Mass. "That term, 'Retired' is very misleading in my case, for I am quite active for my age, 80 plus. To put it briefly — home cares, church work, social service, two houses to care for — country and city, real estate,

trying to keep up my reading with advancing science. I do want to hear what the other 'Retired' are doing."

Herbert B. Newton, Holyoke, Mass.: "I am still president of the Newton Paper Company in Holyoke, — founded by my father, Moses Newton in 1874; but my son, William, vice-president, is the active member, although I do go to the office some of the time, and, of course, to our Directors' meetings."

Mrs. George F. (Elenora C.) Partridge, Course VII, 99 Lexington Ave., Cambridge, Mass.: "I was not a regular student. I took the biological course under Professor Sedgwick. I had specialized in French. I had just returned from Paris and was teaching French, but had to take a class in zoology. I felt the need of more grounding in that subject. Professor Sedgwick was a marvelous teacher, though not adverse to lambasting his pupils. After our first test, mine was the paper held up before the class for ridicule. The test was unexpected and I had not studied for it. However, I ended the course. Passed with credit. I married in 1897 George Fairbanks Partridge. Three children, two sons, one daughter. My husband died in March, 1940."

William A. Robinson, Jr., Course II, New Bedford, Mass.: "While I am retired, I am mixed up in a couple of banks, as a vice president of one, director of another. Regards to '98."

Ralph R. Rumery, Course I, Short Hills, N. J.: "I retired in April 1, 1955 after 43 years as consulting engineer at 50 Church St., New York. Have other business connections that keep me occupied and am still playing golf."

Eugene W. Rutherford, Course II, 225 Lawrence St., New Haven, Conn.: "Retired. Enjoy good health perhaps because I manage to keep busy."

Albion W. Shaw, Course VI, Boston, Mass.: "Retired from Stone and Webster in 1930. Now active as Insurance Broker in office of Fields and Cowles, 40 Broad St., Boston, 8:30 A.M. to 4 P.M. every day except Saturday."

M. de Kay Thompson, Course VIII, 75 Mt. Vernon St., Boston 8, Mass. "Retired from M.I.T. Taught physics since then at Walworth School, two years at Mass. State College, three years at Newark College of Engineering, one year at Northeastern University. Retired again."

James Purdon, Course IV, 310 Commonwealth Ave., Boston 15, Mass.: "Retired."

Homer E. Sargent, Course VI, 222 Arroyo Terrace, Pasadena 3, Calif.: "Retired and getting old."

Karl W. Waterson, Course VI, 56 Whitteredge Rd., Summit, N. J. "For a man nearly 80 am in quite good health. Take a couple of short walks each day. Otherwise don't get very far away. My daughter Anne took her A.M. degree at Radcliff last September and now works in the Museum of Natural History in New York. K. W. Jr. 'Bill' is still at Washington and Lee in Lexington, Va. Was with the A. T. and T. Company until I retired at 65 — never worked for anyone else. Are we supposed to make a donation each year to the Alumni Fund? Any other suggestions will be appreciated."

Paul B. Wesson, Course II, 97 Vinton Rd., Rochester 9, N. Y.: "Re. Class Letter #16. I was retired from the engineering department of the Eastman Kodak Company in Sept. '36 — I took up oil painting and some other interests. I have been a member of the Christian Science Church for many years and began at once to go into the practice of my religion. In 1948 I became an authorized and registered practitioner of Christian Science. I have an office in a downtown bank building and this with my home keeps me very busy. However I took time off last summer for a trip by train to the West Coast stopping on the way out at the Rocky Mountain National Park and on the way home at the Glacier National Park, which I enjoyed and brought back some pictures of snow banks in July at 10,000 ft. elevation. Closing I wish to thank you and Ed Chapin and the other men for all the time and effort to promote the good of our Class."

Our world travelling Classmate, George Cottle, is off on a vacation trip with a sister and two friends, flying Saturday, February 12 from New York by T.W.A. to Cairo, Egypt. The itinerary further comprises visits to Luxor, Beirut, Damascus, Arab Jerusalem, Israel Jerusalem, Galilee (Note — how bold and intrepid! May peace continue in the troubled Middle East — Ed.), Istanbul, Athens, Greece, Crete, Rome, Naples, Pompeii, Amalfi, Capri, Paestum etc., Madrid, Canary Islands, Lisbon, Portugal, and possibly Madiera Islands. Home, April 1. Just imagine the new series of delightful pictures that George will be able to take to entertain friends and the Class at future meetings.

The Secretary and sister are making a similar though somewhat longer trip, flying from Boston on Wednesday, February 15, by T.W.A. to Athens; thence to Cairo, Luxor, Beirut, Istanbul, Athens, Greece, Crete, Rome, Florence, Sicily, Naples, Pompeii, Vesuvius, Sorrento, Capri, Amalfi, Paestum, Rome, Barcelona, Majorca, Lisbon, Portugal, The Hague, Netherlands (tulip time), London and various trips in England, Wales and Ireland. Home, June 7, in time for Alumni Day at M.I.T. and the '98 get-together on June 11! See you there! — EDWARD S. CHAPIN, *Secretary*, 2 Gregory St., Marblehead, Mass. ELLIOT R. BARKER, *Assistant Secretary*, 20 Lombard Road, Arlington 74, Mass.

• 1899 •

This is another story in the series relating the sacrifices some of the members of the class made to get an M.I.T. education. It is printed in the same words of the Classmate whose name remains anonymous. "I was born in the heart of a city adjacent to one of the five largest municipalities in the United States. Even seventy odd years ago, it boasted a population of about seventy thousand. It was at that time largely a residential city of people of the middle and more prosperous class. It had excellent schools and a school board, two of whose members were nationally known. The high school chemistry teacher was a graduate of M.I.T. Class of '90. She repeatedly urged the boys who had made good marks in

her classes to take the entrance examinations to M.I.T. Seven of us did, largely to please her. When I found that I had passed the examination and could enter Tech I wanted 'nothing else but.' My father had suffered financial reverses in the recession of '97 and was in no position to finance my tuition. However, I had worked at various jobs in my spare time including afternoons and evenings in the city's public library and had saved several hundred dollars. So I made my father the proposition that if he would continue to house, feed and clothe me, I would enter Tech and go as far as my finances would allow. He accepted. When my funds finally gave out, Tech helped me and that is how I became an Alumnus of M.I.T."

To Classmates: — If you have an interesting story of how you struggled to get through Tech, send it to your Secretary. It will be published as you write it and anonymously. It may encourage some ambitious youth to make the effort. — B. R. RICKARDS, *Secretary*, 173 Edgewood Avenue, Pleasantville, N. Y. MILES S. RICHMOND, *Assistant Secretary*, Little Compton, R. I.

• 1900 •

The annual "get-together" of the Class will be held this year, as usual at The Pines, Cotuit, Mass. beginning June 12. This will enable any who wish to attend the Alumni Day festivities on the 11th to do so and then go to the Cape Tuesday. We can assure any of the Class who will go to The Pines on that day that they will find some of their Classmates there and that they will enjoy a very pleasant reunion with them under comfortable and happy conditions. As usual, each should make his own reservations directly with the hotel manager, Mr. C. D. Crawford, The Pines, Cotuit, Mass. It is probable that all can be accommodated in Evergreen which those of us who have been there before know is a most delightful and luxurious house. Mr. Crawford is opening this house early, especially for our exclusive use. It will be much appreciated by the Secretary if besides writing to Mr. Crawford for accommodations you will also let the Secretary know that you are planning to come. There will be no special solicitation for attendance this year so do not wait for any but send in your acceptance as soon as possible. If you cannot come we would greatly appreciate some communication from each one of you which can be read to those present so that we may know a little of where you all are and what you are doing.

Stanley Fitch has just returned from a three weeks jaunt to the west. He spent a few days with his granddaughter who is teaching in an Indian Boarding school on a Navajo reservation. Then he went on to Southern California, visiting at Balboa Island, and then flew to San Francisco. We hope to have his own account of this trip next month.

We have received word of the death, on December 16, 1955 of Joseph T. Maguire who was with us in our freshman year. We have not heard from him recently but formerly he was with the Bureau of Yards and Docks of the Navy Department in Washington and he was

still living in Washington at last accounts. ELBERT G. ALLEN, *Secretary*, 11 Richfield Road, West Newton, Mass.

• 1901 •

The plans for our 55th Reunion are progressing and when you read this, arrangements should be practically settled. Any who are coming and have not said so should do so immediately. As these notes are being written the first part of March, I have received 22 replies to the Class Letter. Most of you who have replied have been very good in reporting news. I am still waiting to hear from the rest of you. I will quote from some of the letters which I have received.

Arthur Davis, in Gloucester, writes: "I continue regular business activity as president and manager of the Frank E. Davis Fish Company selling our products entirely through a mail order business established in 1885. We have two children, five grandchildren and five (nearly six) great grandchildren. Although I am a director or trustee of various local things, my chief interests seem to be business, family and a very pleasant home life." From Anna Gallup in Mystic, Conn.: "Anna Billings Gallup was invited to Fort Worth, Texas to see the new Childrens Museum there. It is the first Childrens Museum ever built of tax money, is a beautiful structure and is situated at 1501 Montgomery Street, Fort Worth, Texas. Miss Gallup attended the Mountain-Plains Museum Conference, October 27, 28, 29, 1955, and was invited to be on the program. This conference consisted of museum representatives from ten states extending in a strip all the way from Fort Worth to Canada. Miss Gallup flew from New York to Dallas, Texas, non stop, 19000 feet in the air at 320 miles per hour." Ethel Gleason in Amherst, Mass. sends "Good Wishes." Willard sends me this letter from Jack Scully in Las Vegas, Nevada. "Dear Willard: Sorry I won't be with you at this outing. I'd like to meet the old gang again. I am glad to see Ed Davis is recognized at last. You can't keep a good man down. He is a great credit to our Class and his influence will be felt in Alumni circles. Regards to all the boys. I am very unsteady on my legs so I don't leave the house much." Howard Wood writes that he will not be at the Reunion. He prefers to remember the men as they were five years ago.

Roland Simonds, in Winchester, Mass. says: "Not much has happened since I retired seven years ago. I am enjoying my retirement and find plenty to do. Last June I purchased a five room Cape Cod cottage in Winchester, after living 24 years in a two family house. Have over 14,000 feet of land with two strawberry beds and several flower gardens, many shrubs and trees. Have plenty to do this summer to get the yard in good shape as the previous owner let the yard run down. We enjoy this place very much with everything on one floor. It is located on a hill about one mile from the center of the town. Have been busy this winter taking the street listing of the town. This is my fifth year at it and I meet many people from all over the country. Am also busy with Church and Order of Eastern Star work. March 27 of this year I receive my 50 year

pin in the Masonic Lodge. The first thing I look at in the Review is the 1901 Class Notes. Enjoy reading what the other fellows are doing. Have been to Florida several springs.

From Ed Beckwith in Garrison, N.Y.: "I have been retired since my job in connection with the last war when I was a civilian instructor in air navigation at the Pensacola Naval Air Base. I was sometimes not too popular among the officer students as I made up many of the problems and examinations in this subject which sometimes contained tricky questions. Since the war I have done a fair amount of lecturing on various subjects, including expeditions I have taken part in, one to Mt. McKinley in Alaska for the Carnegie Institute in connection with cosmic ray observations, one with the Peabody Museum Archeological party in Arizona and a very remarkable one of a 4000 mile cruise in a Chinese junk in the Philippines and Indonesia with the late Dr. David Fairchild formerly of the Department of Agriculture. I enclose an account in a local paper of one of my recent lectures and hope some of these details will be of interest to my 1901 Classmates." Ed gave a lecture to "Friends of the Library" on the subject "Space Travel and the Possibility of Life on other Planets." The notice said that Mr. Beckwith was well qualified to speak authoritatively on this subject. We'll be looking for you at the Reunion. — THEODORE H. TAFT, *Secretary*, Box 124, East Jaffrey, N. H. WILLARD W. DOW, *Assistant Secretary*, 78 Elm St., Cohasset, Mass.

• 1902 •

Through a typographical error on the part of your Secretary the date of Bassett's death was given as December 2, 1955. It should have been December 22.

A letter to Dan Patch from John Marvin reads as follows—"At long last I have decided to retire from active business and on March 31 I am turning my business over to my associates. Mrs. Marvin and I are moving to Evergreen, Col., where we have spent more or less of each summer during the last 10 years. We have a daughter and three grandchildren there and Mrs. Marvin's family live in Denver. We leave another daughter and two grandchildren who live near Philadelphia so we no doubt will come east frequently.

"Evergreen is about 27 miles due west of Denver right up in the mountains and from our house, which we built last year, only one other house is in sight but we are within a tenth of a mile of a through route from Chicago to Salt Lake City."

"On December 20 we landed in New York on our return from a cruise in the Mediterranean which we greatly enjoyed. We had a rough crossing of the Atlantic both going and coming but were not among those who had accidents and were lucky in not being sea-sick. We saw a little of Spain, France, and Italy and of course Gibraltar. Then ironically the day after getting home I tripped on a rug in my own living room. I fell and broke my leg halfway between the knee and hip. However I am now getting around on crutches and can drive my car and in another three or four weeks the Doc' says I can throw away the crutches. I guess

that is all the news for now. I hope to get to Boston in May and will try to see you and some of the other Classmates while there. Address after June 1 — Hiwan Hills, Evergreen, Col."

Under date of February 16 Lester Hammond writes to Dan—"I am glad to know you have been skating. It has been many years since I had skates on. Anyway I like better lying on the beach in the sun at 80 degrees.—As for the 55th Reunion, would say be sure and have one. Preferably out in the country somewhere. I do not like the idea of being in a city hotel."

Don't forget our Class gathering at the Alumni Day lunch in June. — BURTON G. PHILBRICK, *Secretary*, 18 Ocean Ave., Salem, Mass.

• 1903 •

J. A. Cushman who died at the age of 75 at the Cape Cod Hospital at Hyannis on March 3 was one of the most devoted workers for his Class. He had a host of friends extending all across our country and a great skill in keeping up friendships by correspondence. He served his Class as Assistant Secretary from 1928 until the time of his death. I doubt if any of us of '03 yet realize how much our Class owes to Jim Cushman. Many of us who worked closely with him have developed a warm affection for him. We shall miss him.

Besides his work for his Class, Cushman served M.I.T. as a member of the Alumni Council from 1931 to 1949 and he also served on the Executive Committee of the Alumni Association from 1943-1945.

Cushman was associated with the engineering department of the New England Power Company for many years. When he retired from this company he moved to Wellfleet, Mass. where he made his home up to the time of his death.

There on Cape Cod he took an active interest in local affairs and at the time of his death was chairman of the Planning Board. He was a former member of the Wellfleet School Board.

Cushman took a great interest in the Congregational Church and has been described as one of the state's most prominent religious teachers.

He was a member of the Board of Trustees of the State Congregational Conference and he has several times been Dean at the Congregational Summer Conference at Durham, N.H.

He was a past president of the Barnstable County Association of Congregational Churches and a founder of the Cape Cod Council of Churches.

He is survived by his wife, Mrs. Gladys Cushman, a daughter, Clara Cushman of Boston and two sons, Allerton P. of Framingham and Richard H. of Worcester.

I was in the hospital at the time of Cushman's death and was not able to attend his services. The Class was ably represented by Class Agent Carleton F. Green and Leroy B. Gould who attended the services and expressed sympathy from the Class. — F. A. EUSTIS, *Secretary*, 131 State St., Boston, Mass.

• 1904 •

Again the time has arrived for the arrangement for notes for the Class Notes Section of the Review and once again, as usual, they are more or less scarce.

I do have a clipping from the Newburyport *Independent Republican* which gives us some news about our late Classmate, Oscar G. Thurlow whose death was mentioned in last month's notes. "Oscar Thurlow, 74, of Birmingham, Ala., had long cherished hopes of returning to his native city of Newburyport before his death. But it was in the south that he achieved his greatest fame as the pioneer designer of the great Mussel Shoals project, over which there raged a furore at one time as to whether it could best be developed by private or government interests.

"Mr. Thurlow was once asked what he considered the highest ideals of an engineer, and he replied as follows: 'I think an engineer tries to put the forces of nature under the control of man, and thus save human effort. He can have no higher ambition, no higher ideal, in my opinion. In hydroelectric work, especially, one is in constant struggle with nature, which endeavors endlessly to assert itself.'

"Oscar Gowen Thurlow was the son of the late Mr. and Mrs. Rufus Thurlow. He was born June 7, 1881, the youngest of a family of three brothers and two sisters. He received his preparatory education in the schools of Newburyport. Mr. Thurlow entered M.I.T., commuting daily from Newburyport, and graduated one of the honor men in the full engineering course in 1904."

A letter from our Classmate, Franklin M. Chace sent to Gilbert S. Tower, Assistant Secretary of 1905 seeking the address of a Mr. Haywood has been forwarded to me. It reads as follows: "I, every now and then, have occasion to read The Technology Review and glance at what the Secretaries write in regard to their classes. The favor I am asking I hope does not put you to any great trouble. I would like to know the address of Mr. Haywood. I was in the Class of '04 and he in '05. We met at the St. Louis Fair. He was a guide there and I was in charge, part time, of the M.I.T. exhibit. We lost track of each other after leaving Tech but he has often come in my mind and I remember him as being an unusually fine young man.

"So many of my Classmates have died that one has to be prepared to hear the sad news of the passing of our friends especially as one grows older. I am out of touch with things at the Institute as I live in Nassau, the Bahamas, all year round. We have a perfect winter climate and the summer weather is much cooler than most places in the states. I still have an apartment at 125 East 57th St. in New York. Letters sent there will be forwarded me or, if you prefer, send the answer by air mail, Box 1389, Nassau, Bahamas, because if not by air it takes forever to arrive here.

"If you ever come to Nassau do not fail to look me up. My wife and I will be pleased to ask you to dinner to meet us and the rest of the family which consists of 16 dogs, some highly bred, others just plain Nassau flea-hounds."

I have also received a letter from Arthur Cutts Willard who is president emeritus of the University of Illinois. His address is 1203 West Nevada St., Urbana, Ill. "You wrote me a wonderful letter from Stow, Mass. on January 21, 1954, and I

have just read it again. Long time no reply and no excuse, except I have had nothing to say of any interest to you. Of course, I always read your 1904 Class Notes with pleasure and profit. . . . Best personal regards and thanks again for that letter. Yours truly, A. C. Willard."

I am not too proud of these notes as a whole as they are small in amount but they, at least, keep the 1905 notes from running over the 1903 notes. Always there is the shining hope that next month may be better, and with this thought I leave you for the present. — HENRY W. STEVENS, *Secretary*, 1082 Commonwealth Ave., Boston, Mass.

• 1905 •

A letter from Sid Caine, answering my letter asking about Claude Anderson's physical condition gives also some information about himself. He states that Andy returned home from the hospital after a very serious operation and at the time (Feb. 17) was recuperating very slowly. Neither he nor Mrs. Anderson are able to correspond, but would appreciate letters from Classmates, address 6142 Wayne Ave., Philadelphia 44, Pa. Sid says he is still active in the ministry, but will be retired automatically next January; that he is in good health and will continue working in some capacity. Gladys Webster writes again (from Coral Gables) that Frank is still confined in bed and has not regained the use of his left arm or leg. However, he is still hoping to gain sufficiently to attend our 51st Reunion. That will be held at the Wianno Club, Osterville, Cape Cod, Mass. on one of the two last week-ends in June, either June 22, 23-24 or June 29-July 1. A formal notice will be mailed you by April 10.

The only other matter of news is the reporting of the death of Ray Bell, II, at the Bethesda Naval Hospital on Jan. 22, 1956. It is hardly necessary to publicize Ray's life to those of us who knew him so well, especially during the years when he customarily showed up at our Reunions at Old Lyme, Conn. with his schooner "Yankee" which he so generously "loaned" us for the week-end and on which he and his wife entertained us so freely. From newspaper clippings we are brought up to date a bit. At his death Ray was a Major in the Army Reserve, having retired from active service in 1919. From that time until 1941 he ran his own management engineering business, with offices in New York, Boston and Chicago. In 1941 Ray returned to Washington as management consultant to the commanding general of the Army Construction Division. In 1942-1943 he was in the Organization and Information Service of the War Production Board, later consultant on plant disposal for the War Assets Corporation and chairman of the Management Allied Consultants. In 1955 he served as special consultant with the Hoover Administration Commission.

Much of the above information was obtained from a clipping from Bertram L. Johnson, III when reported that he had a very serious operation in January but that after a critical post-operative period in the hospital, he was discharged as "better than before." Good luck, Bert. Clippings from other Washington papers

on Ray Bell's death were sent in by Lovell Parker and Mrs. Ben Lindsly, whom we thank kindly. — FRED W. GOLDTHWAIT, *Secretary*, 274 Franklin St., Boston, Mass. GILBERT S. TOWER, *Assistant Secretary*, 35 North Main St., Cohasset, Mass.

• 1906 •

These notes are being written March 11, and you will read them about two months later and by now those who are planning to come to our 50th Reunion should have sent in their form for reservations, etc. If you have not done so, please forward immediately as I think we can take care of you if you act soon. To those who are not coming, won't you please write a note to the Secretary which can be read to the Class at the Class banquet at Snow Inn on June 9. It would add greatly to that occasion if we could have greetings from many of our absent Classmates.

Readers will probably have to wait until the November '56 Review for the story of the Reunion as it will be too late for the July issue. President Killian has written to members of our Class advising that henceforth they will receive complimentary issues of the Review in accordance with the plan for furnishing it to graduates who have been out fifty years or more. This is an excellent reason for making these notes more interesting, which can be done if Classmates will send in items for this column.

Classmates will remember Andy Fisher who took some courses with us but is an affiliate of 1905. The Secretary received the following note from him a few weeks ago: "Although I celebrated my 50th with '05 last June, I have written to a few of my '06 buddies. Bill Walsh sends me this today." Walsh's letter under date of February 21 reads as follows: "It was certainly good to hear from you. I have been very busy getting things straightened out since I retired after 47 years with Fayette R. Plumb, Inc. and its affiliate, Delta File Works. I wound up at the end of the year and my wife and I are starting a trip to Florida and Jamaica next Monday. We also moved from our house and took an apartment in the same section. I note that you live in Roxbury — my old home — 5 Woodville St. — not far away. The Brinks boys really put Roxbury on the map in a big way. I hope to be at the Reunion as I have not been to one since 1915. I do not relish the cap and gown idea though. We should have a Reunion of Course X. No, I have not seen Leavitt Bent since graduation, neither have I heard anything of Phil Sadtler. I thought they might turn up at our Philadelphia Club meeting some time."

Also, Andy forwarded another letter received from Walter Davol. The Secretary had already received notice from Walter that he would be unable to attend the Reunion and this letter gives the reason why: "It was as welcome as a Spring sunrise to get your recent note and to learn that you are still getting around out in bush country like Manchester. Although I am retired, I go to my office every day since it permits me to be near my associates in the retirement activities. I participate in such as Crippled Children fund raising and Boy Scout organizing work.

So when you do get to Manchester you will find me in my office from 9 to 12 noon and from 2:30 to 4:30 P.M. Sure will have the latch-string out. However, I hope in June to get out to Portland, Ore., to see a new granddaughter and hence am making no plans to attend my 50th Class Reunion."

Circumstances require the reporting of two additional deaths at this time, viz. — Herbert Hollnagel, VIII, who passed away on February 23 at the Mt. Auburn Hospital in Cambridge. Hollnagel was an instructor at Tech in 1913 and later worked for the General Electric Company in Lynn and the F. S. Webster Company in Cambridge. He resided in Belmont, Mass. but had not shown any interest in our Class affairs. News of his death was sent to Sherman Chase by his wife, Mrs. Jennie B. Hollnagel and Sherman replied with a note of condolence.

The other death was that of Marden W. Hayward, III. Upon receiving word of his death the Secretary wrote a note of condolence to his brother, Carl R. Hayward of the Department of Metallurgy at the Institute, requesting some facts regarding his brother's career. The following is quoted from Professor Hayward's letter: "Marden had a long, interesting and successful career in mining and geology. I have remarked many times that he should have written some of his experiences for the Class Notes but like many other Alumni he never got around to it. After getting his degree in Mining Engineering with '06 he took a year of special study in geology at M.I.T. and another year teaching mineralogy at Williams College. He then went west and after several short terms of employment with different mining companies he joined the Denver office of the American Metal Company. While there he had an important part in the earliest days of the Climax Molybdenum mine. Within a few years he was transferred to the Cia Minera de Penoles, the Mexican subsidiary of the American Metal Company and although most of his subsequent professional activities were spent in Mexico he had contacts with various mining districts in western United States, Canada and South America. He was probably one of the best known mining men in Mexico. For some years he lived in Monterrey, Mexico but later took charge of the El Paso office and has lived there for many years. Some time ago he made an agreement to give only half time to the American Metal Company, leaving him free for independent consulting work. Four years ago Marden had a heart attack resulting in a ruptured aorta from which few recover. Miraculously he survived and after several months of convalescence became fairly active again. He came to Boston for a visit in the fall of 1954 and last fall attended the annual convention of the Western Mining Congress in Nevada. His death was due to a recurrence of his aorta trouble. He is survived by his wife Jean, two daughters and seven grandchildren. His oldest child, a boy, was killed by an automobile."

Incidentally, Carl R. Hayward was a 1904 man and one of the two who met with our Reunion Committee last year and talked to us about their handling of their 50-year Reunion.

Will close now and resume work on the 50th. Hope to see many of you there but remember, if you cannot come, at least drop us a line so those of us at the Reunion will have some idea of where you are and what you are doing. — JAMES W. KIDDER, *Secretary*, 215 Crosby St., Arlington 74, Mass. EDWARD B. ROWE, *Assistant Secretary*, 11 Cushing Rd., Wellesley Hills 82, Mass.

• 1907 •

Alexander Macomber, one of the most prominent and well-known and capable men in our Class, died on March 14, after a long illness which began with a cerebral "accident" in April, 1954. During undergraduate days Mac was a member of most of our important Class committees; was vice-president during our Freshman year and Class secretary during the Senior year; was officially connected with the Tech Show for four years, being general manager during 1906-07. From 1907 to 1909 he was an engineer with Northern California Power Company on hydroelectric projects in Western United States; from 1909 to 1920 with Charles H. Tenney and Company, managers and operators of public utilities. From 1917 to 1919 he was major and lieutenant-colonel of engineers in the United States Army, and organized and later commanded the 56th Engineers (Searchlights) in this country and in France. In 1920 he formed a partnership with John West, operating as Macomber and West, consulting engineers, specializing in the development and management of public utilities, and this company and Mac personally were very successful. He held official positions in various corporations as follows: director and president of the Nantucket Gas and Electric Company; director and president of the Portland, Me. Gas Light Company; president of the Manchester Electric Company; president of the Gas Service Company, serving five communities in New Hampshire; president of the Association of Massachusetts Gas Companies; president of the Citizens' Gas, Electric and Power Company; president of the Westbrook Gas Company; president of the Kennebec Wharf and Coal Company; managing director of the Community Public Service Company of Fort Worth, Texas; and chairman of the board of the Northeastern Gas Transmission Company, organized in 1950 to carry natural gas from the oil fields to various parts of New England. He was also formerly president of the board of trustees of Franklin Technical Institute of Boston, a member of the Boston Port Authority, a member of many professional societies, a member of the Prudential Committee of the Old South Church (Congregational) in Copley Square, Boston. During World War II he was a dollar-a-year man in Washington, serving as the director of the Manufactured Gas Division of the War Production Board, this division being in charge of all of the city gas companies in the country. Mac was a member of the executive committee of M.I.T. Alumni Association, 1917-18, and from 1920-22; its vice-president from 1923-25, and its 35th president in 1928-29. He was a member of the M.I.T. Corporation from 1929-34. For many years he served as Marshal in connection with the graduat-

ing exercises in June. He has always been a beloved member, adviser, and officer in Alpha Tau Omega fraternity, being both a brother and a "father" to the boys of the M.I.T. chapter at 37 Bay State Road, Boston, and having served for 35 years as national treasurer. His name has for years been listed in "Who's Who in America." For over 45 years Mac has been our Class president and all of us who have attended Class dinners and Reunions recall with delight his graciousness of manner and facility of speech as he presided or introduced speakers. To me, Mac's death is not only the loss of a Classmate and a fellow Class officer but also of a warm personal friend. We first became acquainted as officers of the Corps of Cadets during our Freshman year at the Institute. Then in 1905 I had the satisfaction, with the aid of Emerson Packard and Cliff Draper of persuading him to join Alpha Tau Omega fraternity, along with us and others who were initiated on March 12, 1906. Through the years Mac has befriended me in many ways and although his death was not really unexpected, my feeling of loss is very real. Mac married Miss Alfreda Tarry on August 15, 1929. His widow survives him. The home address was 401 Beacon St., Boston, Mass. Funeral services were held in Old South Church, Boston, on March 16. Phil Walker and I attended to officially represent our Class, and other '07 men also paid their respects to our much beloved and honored Classmate and to Mrs. Macomber.

Early in March I received from John Frank an attractive folder announcing the golden anniversary of the incorporation of Ilg Electric Ventilating Company, 2850 North Pulaski Road, Chicago 41, Ill., manufacturers of Ilg fans, ventilators, and heaters of various types and models. John became associated with this firm as sales engineer in 1910, was general manager from 1920 to 1928, when he became president, and he is now chairman of the board. On last February 13 John became seventy years old, and early in that month, through his sister-in-law, Mrs. Lucille F. Bettman of Glencoe, Ill., I learned of a special family celebration of the event that was to be held at his home, 1152 Chatfield Road, Winnetka, Ill. At Mrs. Bettman's request I sent to John a personal greeting and also wrote to a few '07 men suggesting that they might do the same, with the result that he received quite a barrage of letters. I also sent the following telegram that was delivered to him during the evening festivities: "Congratulations sincere today and best wishes for many future years of vigorous health and family and business prosperity and happiness from the Class of 1907."

Merton Sage and his wife took a round-the-world cruise on the S. S. "Caronia" during the early months of this year, May 15 being the date when they are expected home.—Both Tom Keeling and Roy Lindsay were hospitalized for serious operations during the past winter, but I am happy to report that personal letters received from them in February assured me of their complete recovery. Many letters received from Classmates relative to our 50th Anniversary Gift Fund for M.I.T. have mentioned definite plans of attending our 50-year Reunion June 7-9, 1957.

Some of these are from men who have never been present at any of our Reunions. That is fine! I urge all of you to mark these dates in your 1957 calendars. The time is only thirteen months into the future. Next November I'll be writing to you, with cards for you to return to me indicating your intentions with reference to this event.

You will be glad and interested to know that not only is our campaign for contributions to our Class 50-Year Anniversary Fund coming along nicely, as set forth in the letter that you no doubt received from me in March, but also we are doing a first-rate job in contributing to the M. I. T. Alumni Fund of 1956. As of January 31, 1956, the date of my latest report from the Fund Director at March 9, the date when I am preparing these notes, 61 men had contributed \$10,810.24 to this project, an average of \$177.00 per man. — BRYANT NICHOLS, *Secretary*, 23 Leland Road, Whitinsville, Mass. PHILIP B. WALKER, *Assistant Secretary*, 18 Summit St., Whitinsville, Mass.

• 1908 •

The fourth and final Dinner meeting of the 1955-56 season will be held on Wednesday, May 16, 1956 at the Faculty Club at 6 p.m. Final plans for our informal Reunion on the Cape June 8-10 will be discussed. Please plan to be with us. We are sorry to report the death of Harry C. Patten at Toronto, Ontario last February. He and Mrs. Patten were with us on last Alumni Day when he certainly looked in good health. I understand he had a heart attack while curling. The following editorial from a Toronto paper will be of interest. "In the death of Henry C. Patten, general manager of the TTC from early 1939 until late 1952, this community has lost an exceptionally fine citizen. Mr. Patten came to Toronto from Boston in 1920 as an engineer to help take over the Toronto Street Railway Company. His contribution to the building up of one of the finest public transit systems in North America needs no laudatory words now. It is written in the successful history of the TTC. Citizens in all walks of life will extend their sympathy to his widow and surviving children."

Our globe trotting Classmate, Joe Wattles now is on a world tour with Mrs. Wattles, and sent me a card from Bombay, India, following their visit to the Victoria Falls in Central Africa. Joe told me they are having a pleasant trip. I hope he is getting some fine Kodachromes. Have you made your gift to the 1955-56 Alumni Fund? If not, please do so soon. Remember your gift to M.I.T. counts toward '08's 50-year gift. Let us know as soon as you can if you plan to be with us at our Informal Reunion on the Cape June 8-10, 1956 and how many guests will come with you. H.A.S.N.? — H. LESTON CARTER, *Secretary*, 14 Roslyn Rd., Waban, Mass. LESLIE B. ELLIS, *Assistant Secretary and Treasurer*, 230 Melrose St., Melrose, Mass.

• 1909 •

We received a clipping consisting of almost an entire page from the January 8, *Sunday Republican* of Waterbury,

Conn., telling of the career and the recent retirement of Claude T. (Tug) Wilson, I. There are several pictures, one showing the Princess Hotel, Hamilton, Bermuda, in 1931 with the steel work of an annex for which Claude was the engineer, another showing a tremendous concrete and steel pier under construction in Havana Harbor for which Claude was also the engineer, and a third showing the dedication of the Whittemore Memorial Bridge at Naugatuck, Conn., more than forty years ago of which Claude was in charge of construction. The top left picture shows Claude viewing two pictures in a single frame of the partially built bridge, a gift of the working men on the job. These references to this bridge are significant since in last August's floods 10 feet of water flowed over the span and over the radio it was reported washed out. "I don't believe it," said Tug. "I know that bridge. I built it." He was right. The bridge was built with such formidable retaining walls it could resist most any rush of water. During the construction of the bridge Claude married Miss Elizabeth Springer, the daughter of a well-known Naugatuck doctor. In 1933 Claude left construction work and went to work for the Manufacturers Trust Company in New York City in the real estate and mortgage department where he was involved in reconditioning, operating, and selling real estate much of which had been foreclosed under depression conditions. A short time later he took a similar position with the Colonial Trust Company in Waterbury, Conn., where he remained until he retired early in 1955. He is still active, however, as a member of the school building committee in Middlebury. He is a member and past president of the Connecticut Chapter of the American Institute of Real Estate Boards, and has recently been honored by being made a life member of the American Society of Civil Engineers.

We received a note at Christmas from Mrs. Carl (Hazel) Gram that she and Gloria had purchased a house somewhere in Pennsylvania. We write her asking for further details and have received the following from her: "Gloria is getting Arts and Crafts degrees at Tyler in Elkins Park, Pa. Tyler is the art school of Temple. She loves the work and drives back and forth every day. It was difficult for her to find a place to live and as I was floundering it seemed we could help each other, so I bought this place in Levittown. I have managed to get all my things, which Carl Jr. and Alberta didn't need, together and had a floor laid in second floor to hold the tons. It looks like Fibber Magee's closet but I can look things over and dispose of what I can't use. Alberta is married to Newell Clark and lives in Bronxville, N. Y. She is soloist in Fourth Church, New York. You know what Carl Jr. does. I am sure. Gloria has a dog obedience school two nights a week. I plan to go to Boston soon and will see you then." Carl, Jr. is with the Mason-Neilan Regulator Company in their New York office. The headquarters of the company are in Boston. Hazel's address is 139 Snowball Drive, Levittown, Pa.

In the April Review we reported the

death of Harry Havens, XI, and the fact that we had written to Mrs. Havens. She has replied as follows: "I appreciate very much your kindness in writing about Harry and I know that he, too, would like to have realized that he was well remembered by his Class. His years and experience at M.I.T. meant much to him both in the educational value and in many warm friendships which lasted all his life and which were reflected in his work and in almost everything he did. I am enclosing some 'Reflections' written by Harry's son, Joseph, M.I.T.'40, and read as a moving tribute at the memorial service."

These "Reflections" are a tribute to the affection and esteem in which Harry was held by all who knew him, to his "disarming honesty, forthrightness, his eternal youthfulness," his keen sense of humor, and the love which he always had for his work. This is a tribute which we of the Class can well understand.

A notice from the Alumni office advised us of the death on May 9, 1955, of Chauncey Crawford, I, at Chesapeake, Ohio. He was born in 1879, his home address while at the Institute was Huntington, W. Va., and he graduated from Earlham College in 1897. Our records show that until 1950 his address was New York City. When the late Paul Wiswall, V, was active in the New York area, he frequently organized meetings and luncheons for the '09 group as past Class Notes will show. Your Secretary had the pleasure of attending some of these and Chauncey Crawford was always present. We have little of his career. In 1944 Paul reported him as "an important cog in the firm of J. G. White and Company." He moved to Ohio in June 1950. If we receive further information concerning him we will report it in some later Review.

Just as we were about to mail these notes to the Review editors we received a letter from Molly Scharff, XI, enclosing a clipping from the New York Times telling of the death of Chet Pope, X, of a heart ailment on March 6 at the Overlook Hospital, Summit, N. J. We of the Class are very sorry to learn of this for Chet was one of our most loyal Class members. Many of us recall that in spite of failing health he continued with great effort to attend our Class Reunions, being present at the 45th one at Chatham Bars Inn. On account of present time limitations, a more extended tribute to him will appear in the next number of the Review. — CHESTER L. DAWES, *Secretary*, Pierce Hall, Harvard University, Cambridge 38, Mass. *Assistant Secretaries*: MAURICE R. SCHARFF, 366 Madison Avenue, New York, N. Y.; GEORGE E. WALLIS, Wenham, Mass.

• 1911 •

We have just lost two of our youngest Classmates: Walter Allen, XIII, b. 2-26-91, d. 2-28-56; and Ralph Bierer, I, b. 3-2-91, d. 12-29-55. Walter met a tragic end in a train wreck in Swampscott on a snowy late February morning and Ralph succumbed almost immediately to a heart attack at his home in Binghamton, N. Y., so his brother, John M. Bierer '10 told me.

Walter Defriez Allen was born in Nan-

tucket and transferred from the island schools to Phillips Exeter, whence he graduated prior to entering M.I.T. with us in the fall of 1907. He was a very active and popular member of the Class and a finished athlete. Starting with our Freshman tug-of-war team, Walter was a member of Class and varsity track teams through all four years, his big specialty being the pole vault. He also was a gymnast of no mean ability, being a member of the gym team during his upper three years, serving as both captain and manager in his Senior year. He was a member of the Exeter Club and the Naval Architecture Society, which he headed as president in his Senior year.

After graduation Walter worked for shipbuilding firms in New London and Bridgeport, Conn., later coming to Boston with Stone and Webster. He married a Nantucket girl, Marion Congdon, who survives him, and for a time they lived in Framingham. In the mid-thirties he served as a special assistant to the building commissioner of the City of Newton and left that post to become chief engineer for the A. C. Lawrence Leather Company, Lawrence, Mass., living in Peabody. He is also survived by a son, Richard, of Cincinnati, and two daughters, Nancy of Peabody and Mrs. Martha Farwell of Lexington, Mass. He was the grandson of a Nantucket whaling captain and never lost his love of the sea. As reported last month he had just been retired due to age and was very happy at the M.I.T. mid-winter dinner February first, with plans for travel with his wife. Then that fateful late February morning he was on his way to Boston for a consulting date, when the forward car of the Budd train in which he was riding was telescoped in a crash and 13 people killed instantly. Jack Herlihy, II, and Carl Richmond, I, represented the Class at the funeral.

At this March 11 writing word reached me just a few days ago of the death of Ralph William Bierer, I, who joined us at the beginning of our Junior year, after having received a B.S. degree at Washington and Lee University in his native Virginia just three months after his 18th birthday and received his S.B. with us just two years later — one of the youngest ever. He was a member of the Civil Engineering Society and the Technology Club during his two years with us. He wrote his thesis on the effects of earthquake shocks on brick and concrete columns with our late basketball star and Class Day first marshal, Ted Parker.

Immediately upon graduation with us, he joined Dunn and McCarthy, Inc., shoe manufacturers, Auburn, N. Y. and remained with them throughout his business career. He retired two years ago after many years of faithful and effective service as General Manager in charge of manufacturing at the Auburn and Binghamton plants of the company. He was stricken with a heart attack four days after Christmas, 1955, and died almost immediately. He is survived by his wife and one married daughter, mother of four children. Belated sympathy was given to his widow immediately upon learning of Ralph's untimely death.

And now we have just received this

announcement from Pete Gaillard, VI, in Washington: "After a long and distinguished career in the Regular Army, Colonel Henry C. 'Doc' Davis, U.S.A. Ret., died 26 July 55. He served with distinction in the Coast Artillery, the Ordnance, and the Antiaircraft Artillery, and was with General Marshall's mission to China. After retirement he lived in southern California, his last home being in Corona del Mar. All who knew him well loved him and admired him tremendously. 'Doc' was a grand person!"

Born at Starkville, Miss., October 7, 1888, son of an Army officer, 'Doc' prepared for Tech at Phillips Exeter and in addition to his particular flair for "freshman drill," followed by sophomore officership, he was most active on campus. He was active in the Electrical Engineering Society and a member of the Exeter Club; successively assistant publicity manager and in our Junior year publicity manager of Tech Show and a member of both the senior portfolio and class day committees. He did his thesis with Pete Gaillard, both members of Chi Phi fraternity, on plans for the hydro-electric development of a Panamanian river. We mourn the loss of another loyal 'Ivener.

Copies of the March pre-Reunion edition of "TheIvener" have gone into the mails this weekend and another issue should reach Classmates about the time you receive this batch of Class Notes. There will still be time to decide to attend our 45th Reunion at Snow Inn, Harwichport-on-Cape Cod, June 8-9-10 and Alumni Day at M.I.T. on Monday, June 11. See you there, I trust.

Had a nice note from Jack Romer, V, an old Goodyear standby, with his check for Class dues recently: "Sold our house in Akron, Ohio, last November and located here at 41 Juniper Road, West Dennis, on Cape Cod, early in January. As Snow Inn is just a few miles from here we're planning on attending many of the 45-year Reunion events, but will not need room reservations. Mail address: Box 97, West Dennis, Mass." — Also from Aleck Yereance, XI, in the same vein: "After the last Reunion Edna and I started looking for a summer shack on the Cape and now we own a house on Belmont Road, West Harwich, between Main Street and Lower County Road. Last year, my first retirement year, we went there June 1 and this year plan to go about the same time and stay three months or more. So while we'll sleep at our place, we expect to attend Reunion affairs between after-breakfast and midnight. Summer mail address: P.O. Box 289, West Harwich, Mass. and phone Harwich 1341-W2."

These Class dues campaigns once every five years sure produce some interesting and enjoyable letters. Here's one from Ray Lord, VI, Hillside Road, Wakefield, R. I.: "It is now two years since I retired from my Factory Mutuals work, after 27 years with FM and five with Affiliated FM Insurance Company, as agreed when I took on the job of organizing and operating this new company for its parents, the Factory Mutuals. The day of my retirement was almost exactly fifty years from the day on which I went to work in Chelsea, Mass., as a stenographer.

"Although I had looked forward to

retirement for several years, there was, in the back of my mind, a little wonder if I could enjoy leisure after being busy so long. So we closed our apartment in Providence immediately on turning over my job to my successor and my wife and I started by auto on a trip that was to cover more than 18,000 miles in about five months. We almost literally went around the United States—Providence to Key West, Florida; to Brownsville and El Paso, Texas; to Tucson, Ariz.; to San Diego, Calif.; to Seattle and Grand Coulee, Wash. and back to Providence through Chicago and Cleveland. Of course we took in many of the national parks and other places of interest and were fortunate enough to have a lot of good colored slides to remind us of the beauties and unusual things we had seen. (Bring 'em to the Reunion, Ray!)

"Incidentally, our trip started off with a bang. We were sitting in the gallery of the House of Representatives in Washington at the time the band of Puerto Ricans shot up the place, including several Congressmen. We were seated diagonally opposite from them while they shot, so if their guns had been horizontal we probably would have been also!

"On our return we went to our country place in Escoheag, R. I., and started looking for a new home. We bought in October on a hill on the outskirts of Wakefield, R. I. The house overlooks Narragansett Pier and our view takes in Newport and the entrance to Narragansett Bay as well. In fact, on a clear day we can see Cuttyhunk, off Falmouth, Mass., on the Cape and Gay Head at Martha's Vineyard. Now when I tire of fussin' around or of reading, I can watch the ships coming and going and with the Navy so active there is a lot of coming and going. I also like to garden and have put in a lot of time around the place—and I like to fish. Altogether I am very happy with retirement and have found there are so many things I can do now that I'm never a bit bored. Hope you and other Classmates will drop in and see us."

Last month we told you of the retirement of Frank Smith, III, from American Brass Company, Waterbury, Conn., and I received a fine letter in reply to my congratulatory note to him: "Now that I have retired, family obligations will keep me tied down for a few years, maybe. When the opportunity comes, the Missus and I plan to go to Hawaii to live, near our daughter, who, with her family, is a permanent resident. But I'll be 71 this February 28—it may be later than I think. I shall not do much but go bass-fishing from boat, paint a few weird landscapes in watercolor, keep the doorway neat, eat and sleep—what a program!"

Speaking of Hawaii, Royal Baron, VI, and Jessie are spending most of the winter with their married daughter and enjoying it immensely. "In general the weather has been good," Royal writes, "with warm days and cool nights. We have been swimming often, as well as sightseeing. I have taken many pictures from the movie camera the office gang gave me when I retired from Ebasco Services. A few rolls have been finished

and, for a beginner, look pretty good. See you in June, we hope."

Initiated by O. W. Stewart, I, chairman of the research committee of the Massachusetts Blueberry Growers' Association, and with cooperation of the Massachusetts Audubon Society and the Worcester Horticultural Society, a meeting was held in January in Worcester to discuss the question of damage to crops by birds. In the discussion it was indicated that there has been increasing damage to fruit crops during recent years, but shooting of the birds has not proved effective or economical and O. W. expressed for all the growers the desire to protect the birds for their esthetic and economic values while at the same time sound methods are worked out for the protection of crops. More intensive and extensive research was decided upon by the organizations concerned to study, in particular, the exact species of birds causing damage, the time of day when most damage occurs, relation of ripening of crops to migration or flocking periods, relation of weather, particularly moisture content, and further testing of carbide exploders and other preventive measures. Discussions will be continued at a later spring meeting, O. W. said.

Cleanings from other nice notes accompanying Class dues: Frank Taylor, VI, Rochester, N. Y.: "Have driven to Florida, New Brunswick, Maine, Vermont, Chicago, etc. in past two years. Hope to leave for Florida again March 1. I am really enjoying retirement and it's always so nice to hear from you—would love to see you."—Frank Stibbs, XI, Wethersfield, Conn.: "I saw Norman Wade, II, the other day—he is prosperous and retired and told me of others who are the same. But in my case, I am still on the job and will be until I'm fired at 72 or drop before that. I like this job as Chief of long range planning for the State of Connecticut and to a large extent I do what I please and travel where I please, just returning yesterday from a 10,000-mile trip flying around the country to look at prisons. We have \$60 million to spend this year and I like my little contribution to this big job."—Frank Osborn, III, Vineland, N. J.: "Retirement at last is at hand, although I haven't been winned and dined. That is what they tell me and maybe it's later than you think."—Stu Copeland, II, Cloquet, Minn.: "Sorry, I won't be able to make the Reunion on account of conflict with annual meetings I must attend. Regards to all."—A. T. Cushing, I, Kansas City, Missouri: "Guess you know I have been retired for nearly six years from U. S. Government employ. Biggest job I've had since was three and a half years, January '51 to July 54, as office engineer for Tanner and Mitchell on the Rehabilitation of the Sunflower Ordnance Works, De Soto, Kansas—a \$75 million job. Best of luck to all '11-ers!"

Did you catch the fine pencil sketch of I. W. "Bun" Wilson, XIV, Alcoa president, heading up an Iowa Development Commission ad in *U. S. News & World Report* for Feb. 17? It featured a statement by Bun headed "Our Decision To Move To Iowa Was A Wise One," describing why Aluminum Company of

America located its newest plant in the Hawkeye State. Quite interesting. Also did you happen to see and hear General George Kenney, II, on Art Linkletter's TV "houseparty" the afternoon of February 24? He had been announced for the day preceding, so I went home early and watched the program with Sara — but no George. However, Sara "caught" him the next day, and he discussed arthritis and rheumatism.

That's it for now, Classmates. See many of you at Harwichport or at Cambridge that second weekend in June. Please do your best to make the Reunion and/or Alumni Day this, our 45th year! — ORVILLE B. DENISON, *Secretary*, Chamber of Commerce, Framingham, Mass. JOHN A. HERLIHY, *Assistant Secretary*, 588 Riverside Avenue, Medford 55, Mass.

• 1912 •

I had the opportunity of taking a short trip through Florida in February and was able to call on several 1912 men who are now living there.

I had a very pleasant morning with Ted Marceau who is now living at 1828B 20th Avenue, North, St. Petersburg. He has a wonderful collection of shells which he and his wife have picked up during the past four or five years. He has not had an opportunity to get them in display order yet, but has this to look forward to. Ted is well except that he has to live a restricted life due to a blood condition.

I talked with J. M. Costner who is now living at 633 Altara Avenue, Coral Gables, Fla. He retired several years ago on account of his health and has found that the mild Florida climate has been of great benefit. He is keenly interested in current affairs and says that he is constantly writing articles for publication on current events.

My next call was on Lester and Jennie White at 1230 N.E. 102nd Street, Miami. Les has built a most attractive home about two blocks from the beach and is settling down to a very comfortable life. The house is completely air-conditioned and he has equipped the kitchen with all the latest luxury gadgets. To water his lawn he merely turns a valve as the piping is buried with no danger of frost. We had a very pleasant dinner together at a nearby restaurant, sitting under the palms in the middle of February. I might say that this seemed very pleasant to me.

Our next stop was to DeBary to see Bill Canady who has built a home on East First Street there. Bill retired after many years with the Post Office Department in Albany and is now enjoying his garden. Sweet peas were in bloom and camellias were just coming into blossom. Orange and grapefruit trees were in blossom and it certainly was a most delightful spot.

It was quite a shock to get back to Boston and find winter still with us. — FREDERICK J. SHEPARD, JR., *Secretary*, 31 Chestnut Street, Boston 8, Mass. LESTER M. WHITE, *Assistant Secretary*, 1230 N.E. 102nd Street, Miami 38, Fla.

• 1913 •

Last call and all aboard for the 1913's 43rd Reunion. Come by plane; auto; "Budd"; bicycle; roller skates: Yes, even

"shanks-mare," but come, to the New Coonamessett Inn Falmouth, Mass., on the Cape, June 8, 9, 10, and the 11. Then on to the Institute for Alumni Day, also on June 11, 1956. Have you forwarded your Reunion year dues? A mere five dollars insures you to a full membership to our 1913 club. Where or when can you receive so much for so little? Even the five cent cigar or five cent beer have doubled or multiplied in price.

You joiners to the 43rd Reunion movement and you stay-at-homes should forward any publications or narratives of your experiences or accomplishments for our edification. There will be an exhibition of 1913's treatises at the Reunion. Why not send in your contributions either atomic, nuclear, molecular, or just examples of your hobbies. Dutch Franzheim and Lester Gustin have already furnished us with several volumes of their automotons. Larry Hart writes: "I have just a few moments before leaving by plane to return to Los Angeles, having just come back home from a five weeks trip to the Coast last week. I am sorry that I missed seeing you when you were in the city to attend the big M.I.T. dinner on January 4. I regretted also the fact that my absence on the Coast prevented me from attending that tribute to the memory of Dr. Compton. With kindest personal regards and best wishes to you and Rosalind." Dame Rumor tells us that Larry will retire from active service with Johns-Manville come June. Congratulations, Larry.

Talked with Pop Ready yesterday by phone and he reports that he is feeling quite fit these days, however, our adopted daughter Neva (senior) has been in the hospital for a short time but is expected to return home today. We are much pleased to learn that she is again approaching her usual good health. The Capens just spent a very enjoyable week end with that young fellow named Charles Thompson at his home in Newton. Also worthy of note, we also spent a very pleasant evening with the Mattsons enjoying their descriptions of Bill's activities in Florida and other southern island resorts and Janet's sojourn in "Hulla Hulla" land.

Well! we were overjoyed to receive an epistle from Jeff Rollason and we quote: "Prompted by several things, including seeing you at the N. Y. dinner and reading your excellent 'column' in The Technology Review, I finally jolt myself into sending a few notes and remitting the revised Class dues. I retired from active service with Alco in June, 1954 and after a few months as an 'insulant,' finished with them at the end of that year. With plenty of time on my hands I was able to take a more leisurely trip 'back home' to Australia than the three or four quick visits made in years past — and take my wife with me for her first visit. We flew from San Francisco to Honolulu, then to Canton Island, Nandi (Fiji) and on to Sydney; the whole trip in 38 hours elapsed time against the 20-22 days by ship (when available). Lived at the family domicile in Melbourne and took a number of trips to the picturesque parts in the Southeast, not into the more or less arid interior which has been more publicized than the

coastal and the mountainous parts. We also paid a visit to my brother who has semi-retired and gone north to a warmer climate in Queensland where he grows bananas, pineapples, tropical fruits, etc., as well as more conventional truck farm products for the Southern Cities' (winter) markets. That part of Australia (Queensland), while a bit primitive at present, has all kinds of future possibilities and needs population which is being boosted by a very much changed immigration policy of the Australian Government. They realize since the World War II that if they are to maintain their White Australian policy they must populate their north with Europeans, or perhaps, be populated by the yellow hordes from southeast Asia etc.

"Our Classmate and dear old friend 'Lammie' Lemaire is supervising immigration and transients at Townsville, on the Northeastern Coast. We saw him in Melbourne where he is spending a vacation with his wife for whom the tropical climate of the north is too severe. He was about to start driving back north to his job — 1000 miles to Brisbane where we were going (by air) and then another 1000-1200 miles to Townsville. He was most interested in M.I.T. and 1913 and of course, sent his best to all. He is honorary secretary for M.I.T. in Australia and I believe has been in communication with Bat Thresher and others. After a couple of weeks in Queensland, we returned to the old home town (Melbourne) where I was fortunate in running into quite a number of schoolmates and old friends. I attended an Old Boys dinner at my old "public" school and even sported an old school tie!

"We flew home again at the end of May and this time broke the journey at the Fiji Islands and Hawaii. Fiji is a most interesting place; well described by 'South Pacific' Michener in his 'Return to Paradise.' Arriving from Sidney at the international airport we took off at 10 P.M., with a Hindu chauffeur, through the plantations and some rather wild country to a recommended spot about 75 miles away. A few mild adventures and the primitive condition of the road made about a three hour trip of it and we arrived about 1:15 A.M. at a 'hotel' consisting of thatched-roof, native style huts on a sort of campus around a central dining room (and bar). About all we registered that night was the booming of the South Pacific surf but next morning woke up to look out through our mosquito netting at one of the most beautiful sights I have seen. I heartily recommend Fiji to anyone who wants to see a bit of island life, less civilized and spoiled than Hawaii but with reasonable tourist comfort. In fact, Honolulu, where we stayed over for four days seemed very metropolitan and was a bit of a let-down.

"Getting back home to New Jersey and the heat and hurricanes of June, July, and August of 1955, I found it rather easy to be loafing, with a couple of trips to Vermont but with the coming of fall got restless, with the result that I have taken a part-time assignment for the American Die Casting Institute, the Trade Association in which I was active for about 20 years prior to retirement.

It (the job) is neither very strenuous nor very remunerative but keeps me in touch with the things and people of interest and can be turned on or off by mutual consent and helps to avoid complete rustication. As far as we can see now, we will keep a domicile in Plainfield, N. J., where we have lived for over 30 years, rather than to move to Florida or the like. Home is where one's friends are, and I hear of more and more people who, on retirement, maintain their residence where they have been living. However, fortune and health permitting we hope to travel quite a bit and now are looking forward to a trip abroad next month. The occasion, or pretext, is a family wedding in England. While over there we will try and see some of the Continent which I have not seen since 1912 except in war (1918) or the threat of war (August 1939). We should be back by early May and that is in ample time for the Reunion at Coonamessett for which I hereby request two reservations. Looking forward to seeing you."

Well, you "Sons of M.I.T." lets hurry up and send in your requests for accommodations for our 43rd Reunion at the New Coonamessett, June 8 through June 11. Write us today. GPC signing off until next month. — FREDERICK D. MURDOCK, *Secretary*, 88 Rumstick Road, Barrington, R. I. GEORGE PHILIP CAPEN, *Assistant Secretary and Treasurer*, 623 Chapman Street, Canton, Mass.

• 1914 •

While these notes are being written in early March, with snow still on the ground at Cambridge, it is time to remind all who can come to M.I.T. on June 11 that Alumni Day is rapidly approaching. An innovation is being tried this year by having the evening dinner held at the "Cage" on the Institute ground in Cambridge. This will mean that all Alumni Day events, including the luncheon and dinner, will be in Cambridge. It will make it possible to be concentrated in one location, where there will be a greater chance of meeting one's friends. 1914 will join the general cocktail party instead of holding a separate event. It is hoped that as many as possible will attend.

Dean Fales has left the deep Maine snow and departed for the warm climate of Florida. More than weather, however, is involved. Dean really went to Sebring to see the World Auto Races and to witness the United States' selection. Dean is always ready to be stirred from his comfortable, retirement home to see a good auto race.

Ray Dinsmore came to Cambridge on March 5 to attend the quarterly M.I.T. Corporation meeting. He flew back to Akron that evening and back to Cambridge on March 8 to be speaker of the evening at M.I.T. on the subject of "The Responsibilities of Scientific Leadership." This was part of a program held under the auspices of the Northeastern Section of the American Chemical Society.

Lin Faunce retired on February 8 after 35 years with the New Jersey Bell Telephone Company. At the time of his retirement, he was division buildings supervisor. Lin's home was in Cranford, N.J.,

but he has moved just north of Hartford, Conn., where he has built a retirement home. The attraction there is being near his children and six grandchildren.

The effect of the years seems to be catching up with more and more of us as the years pass by. Ernest Crocker has recently spent a bit of time at the Peter Bent Brigham hospital in Boston with what is politely referred to as a hypertension incident. By taking good care of himself, Ernest has made a good recovery and appears very cheerful.

Through the courtesy of Paul Owen, as well as other Classmates, word has come of the death of James Isaacs on February 17. Jim had been ill for about a year with a liver difficulty, considerable time having been spent at a hospital. He was the founder and president of the Plant Equipment Sales Corporation of New York City. The company dealt in heavy materials handling equipment. He had previously been an eastern sales representative of the Coldy Steel Manufacturing Corporation of Seattle. Jim was born in Oakland, Calif., but after coming to the Institute, he remained an easterner, making his home at Caldwell, N. J. He married Grace Hunt on October 21, 1916. She survives him, as well as a daughter, Mrs. Henry R. Withington, and three grandchildren. During World War I Isaacs served as a first lieutenant of the Engineers. — H. B. RICHMOND, *Secretary*, 275 Massachusetts Avenue, Cambridge 39, Mass. H. A. AFFEL, *Assistant Secretary*, 120 Woodland Avenue, Summit, N. J.

• 1915 •

If you have not paid your Class dues dig out that addressed envelope — no postage required — and stick your check in it for Henry. He's doing a grand job of collecting and will welcome your dues.

Everyone with families and guests is invited to the Class cocktail party, Monday afternoon at four o'clock, June 11, at the Algonquin Club, Commonwealth Ave., Boston. Whether you are going to the Alumni Dinner that evening or not, you're welcome to come and visit with other Classmates. Barbara Thomas and Al Sampson are again the committee for this. At the annual meeting of the Technical Association of the Pulp and Paper Industry (TAPPI) in New York on February 22, I saw Allen Abrams, Vice-president, Marathon Paper Corporation. Allen is a past president of TAPPI. Dave Lowry '40 is secretary of the M.I.T. group of members and does an outstanding job of getting 75 or so men together for this annual luncheon. Dave Hughes, on the West Coast, is unbecomingly reticent, when, with his dues check he simply says, "Don't know a thing."

Our wandering Classmates: from London in February, Parry Kellos wrote: "I have been in England three weeks (London 3 days), I am going to Stockholm, Amsterdam, Brussels, Luxembourg, and Paris. It's been cold here. This is a business trip." Wonder why he emphasized that last sentence.

Wally Pike sent a clip from February 9 issue of *Engineering News-Record* showing Howard King receiving a plaque as one of the top honors that a construction man can receive from his fellow workers.

This was given by the "Moles" which we mentioned last month. Howard, Vice-president and chief engineer of Mason and Hangar Company, New York City, is directing work on the Lincoln Tunnel third tube in New York City. Howard wrote: "Your notes in the February Review about Abe Hamburg were beautifully expressed — warm and affectionate — a good job done!"

Many Classmates have asked about Frank Scully — he is well and happy with his delightful family and brings us up to date with this interesting letter about himself. "In answer to your request for news you can gather that I am not loafing, from the February 27 article in *Time*. While the Scully Signal Company is developing other products for the petroleum handling industry, we have been devoting considerable time and money to electronic developments. Our work was primarily in the field of combustion controls, which led us to the belief that none of the electronic circuiting was "fail-safe" and we went to work to develop a "fail-safe" technique. We succeeded — and then found the tail could really wag the dog — the monitoring technique was applicable to so many fields that it was really too big for us to handle as far as manufacturing was concerned. We adopted a policy of licensing and our first licensee was Minneapolis-Honeywell Company, who, I anticipate, will use the technique in many of their controls. We had a large meeting in New York on February 15 when we demonstrated the technique to about 150 representatives of the Army, Navy, Atomic Energy Commission, various representatives of fire insurance associations, regulating bodies, a few industries and the press. I shall probably spend most of my time on this phase of our business. Our patent structure looks very promising. It is interesting that our first application has 80 claims — many of which have already been allowed. Foreign patents have been issued to us. My sons Frank, Jr., and Bob are with me in the business, while Peter is a Sophomore at Harvard. Our daughter is in New York. It's a terrible cross for an M.I.T. man — three Harvard sons! No marriages yet so when Classmates talk about grand-children I have nothing to talk about. You and I can console each other."

Why not take Frank's nice letter as an example — go thou, and do likewise — and "help Azel." — AZEL W. MACK, *Secretary*, 100 Memorial Drive, Cambridge, Mass.

• 1916 •

Dave Patten has some suggestions and also gives us some more useful information for the column as follows: "Receipt of the Hotel Chatham photo is acknowledged with split reaction — for the effort, thanks with a capital 'A,' but for the record and posterity it better be hidden in the back of the album. However, it served to bring back thoughts of a happy evening with old friends and what's more important in life. Sitting next to Herb Mendelson, I was thrilled to hear at first hand his account of a recent African Safari. If I'm not mistaken, he has colored slides of this trip, and let's have him give us an evening with these at the Reunion.

"There has been some TV and news-

paper publicity across the country about the rebuilding of the Pilgrim ship 'Mayflower' in England to conform as near as can be to the original, most records of which have been lost. The marine architect and research authority for this project is interestingly enough, William Baker, M.I.T. '34, naval architect for Bethlehem Shipbuilding. British sponsors announce their intention to complete the new 'Mayflower' this year, down to the last detail, and that she will sail to Plymouth next year under command of Captain Allan Villiers of square rigger fame, to be presented as a gift to the American people. This will be reliving a story difficult to epitomize, so broad and sweeping are its ramifications in religious and material aspects, to say nothing of its romanticism.

The voyage, without auxiliary power, will be followed by hundreds of thousands of people on TV, and once arrived, she will reenact the landing of the Pilgrims, and come to final resting place on the reconstructed site of the original Pilgrim Settlement. As executive director of the Plimoth Plantation, Inc., an organization started a number of years ago to rebuild the original and first houses of the 1620 landing, I expect to have a busy time ahead and a need for money in far greater amount than we have had to date. The English plan envisages a 'Mayflower Fund' to result from the project, for the establishment of an exchange scholarship, and for the reaffirming of this unparalleled devotion to the cause of religious freedom, equality of opportunity, and the primitive beginnings of an ideal Americanism, which God willing, shall forever endure.

It was my pleasure as always to see Steve Brophy in New York recently, and last Thursday I sat next to Brad Curtis at lunch.

In conclusion, it has often occurred to me that the location of the Institute, making our Reunions in this vicinity mandatory, places a handicap on attendance. Why not ask some Class member in each of the more distant places to promote attendance among his local Classmates, and if possible make helpful suggestions on transportation. And last, but not least, how about starting a kitty this June, or anytime, for the establishment of a fund to meet all the housing expenses of the fiftieth reunion with a provision for utilization of any surplus dollars. This might be for future Reunions or whatever the Class decides."

A note from Ray Brown says: "I should be very happy to brag about my grandchildren, but I think I shall wait until Reunion time when I shall have color transparencies, snapshots and precocious sayings all ready to compete with the formidable competition I know I shall experience from other Classmates with their wonderful grandchildren! I recently had a letter from Harold Gray who says he is planning to go to Oyster Harbors; this you very likely already know. Meanwhile, looking forward to seeing you."

We have further information from Al Nibecker whom Francis Stern contacted on the West Coast. Al says that it isn't going to be possible to attend the Reunion, and then goes on: "I was a special student in Architecture at Tech and knew only a few of the fellows due to my short

stay. After having my own office as Architect in Los Angeles, I took the position of Architect for the Los Angeles City Board of Education. This position is like a Supervising Architect as, in addition to our own staff design, I directed the work of all private architects doing work for me. Later, upon the leaving of the Business Manager of the District, I was given this job also and became Business Manager and Architect. This job handles all phases of the District work except the teaching, and in the Los Angeles District with over 400 Schools is sometimes a task. Upon reaching the age of 65 last June I was retired as of July 1. I no doubt will get back into private practice as our pension system is quite meager. (Should have been a policeman.)"

A note from Dick Berger points out that he has been over his ears working on his book dealing with Cancer Prevention. He hopes the book will be terrific and perhaps completed within a few months. The title selected tentatively is *Cancer Because*.

George Bousquet who was at the Reunion Planning Dinner in December sent along a nice letter pointing out that he always enjoys reading the Class Notes but that he must admit that his contributions have been nil up to this attempt. He then goes on "I have been married for 35 years. We have one daughter, Claire, who is a research chemist at Washington University in St. Louis. My business activities have taken me to a number of places to live: Lowell, Springfield, St. Louis, Baltimore, Wilmington, New York and White Plains. After working many years in numerous industries—brass, small arms ammunition, titanium pigments and finally, heavy chemicals, I settled down with General Chemical Division of Allied Chemical in New York City twenty years ago. Unfortunately, so far I have developed no real hobbies. A few years ago I participated in a Citizen Group here in White Plains which annually analyzed the City Budget, made a city-wide property tax study, attempted to anticipate the effect of the New York Thruway on White Plains. I found such activities interesting but unfortunately also discovered considerable apathy on the part of the average commuting citizen in the affairs of his community." This completes the Bousquet family history to date according to George.

Jack Carr sends thanks for the picture of the December 8 get-together which he says "shows all of us ancient '16 men looking pretty hale and hearty." He then goes on with his contribution: "We left Wilkes-Barre January 13 and after listening to reports of cold weather in Florida, made our trip South a leisurely five and one-half days and arrived bringing warm weather with us. Have been playing a little tennis which I love but unfortunately my running days seem to be over. If I can walk to the ball o.k., otherwise I let it go. The water is 70 degrees and I like it a little warmer for swimming but will soon get up my nerve and go in the water. Our oldest son enlisted in the Army January 30 so that is another milestone. The youngest gets out of prep school in June and expects to head for the Navy.

So it looks as though my wife and I will be strictly on our own for the next three years. That's three paragraphs, but it doesn't add up to the value of that group picture. Perhaps my most important news is that I can scarcely wait for our 40th Reunion in early June. Hope we'll have a big turnout. Expect to be in Palm Beach until May 1. If any Classmates are to be in Florida, would like to hear from them. We are listed in the phone book and easy to find. (Address: 260 Pendleton Avenue, Palm Beach, Fla.)"

Willard Crandall recently pleased us with this note: "Thanks for the note and good wishes. Now mending rapidly, I need not miss any 1916 affairs in New York City hereafter, but traveling out of town is still quite difficult. My thanks to the men of '16 for the friendly greetings that came to me from the December 8 dinner. I wish all of you good fortune and security. The Westerly address was temporary; I am now living at 4 East 28th St., New York 16, N. Y." Wonderful to hear of your return to good health and will be looking forward to seeing you in June, Willard.

Maurice Holland was recently honored when he was presented the Founder's Award at the fall meeting of the Industrial Research Institute, Inc. The award read: "Industrial Research Institute Founder's Award to Maurice Holland in recognition of his vision, persistence, energy and skill in laying the foundation on which the Industrial Research Institute has been built, thereby advancing the cause of industrial research and contributing materially to the welfare of the Nation." In the program for the meeting, this biographical material appeared: "Maurice Holland's role in the history of industrial research has been that of promoter, organizer and adviser. Beginning in the mid-twenties he pioneered the cause of industrial research under the aegis of National Research Council's Division of Engineering and Industrial Research, of which he was director for eighteen years. Through addresses, articles, books, and other media, he promoted the use of scientific research as the tool which would stimulate the growth of our nation's industries. In his role as organizer, Mr. Holland has assumed leadership at home and abroad of committees, conferences, missions, and other movements which furthered the cause. With the accelerated expansion of research staffs in industry, it became evident to him that there was great need for an authoritative mechanism whereby research executives, regardless of their industry, could meet on common ground for discussion of their management problems. To satisfy this need he organized the Industrial Research Institute in 1938 with fourteen companies as charter members. Since 1941 as a consultant, Mr. Holland has given generously of his knowledge and experience to the continued advancement of industrial research in the United States and abroad." Congratulations, Maurice.

A pre-Reunion dinner for the purpose of planning the activities for the 40th in June was held at Joseph's Restaurant in Boston on Monday, February 27, and was very well attended. The group included: John Woods, Earl Edwards, Paul Duff, Al

Lovenberg, Tom Berrigan, Steve Berke, Frank Chandler, Howard Claussen, Bob Crosby, Bill Drummey, Dan Comiskey, Ralph Fletcher, Allen Giles, Emory Kemp, Tom McSweeney, Howard Hands, Harold Russell, Bridgie Webber, Nat Warshaw, Joe Minevitch, Dave Patten, and Steve Whitney. Izzy Richmond intended to come, but being on crutches himself and with sickness at home, he just couldn't make it. Jack Hickey sent his wishes from the West Indies — "Having a wonderful cruise. Temperature at Nassau yesterday 80 degrees, water 75 degrees. Spent day on beach. Will arrive St. Thomas tomorrow. Will reach N.Y. March 6. Best to all the gang." And, Hy Ullian wrote: "Am leaving for Florida this Sunday and doubt that I will be back for the meeting on the 27th. If I cannot make it, rest assured of my support for anything I may be asked to do. Give my regards to all." At the meeting, it was brought out that at the 35th Reunion cocktail party, some of the professors at M.I.T. and other special guests were invited to attend the party; and if a Classmate has a particular guest in mind whom he would like to have invited to the cocktail party being held in conjunction with the 40th, let Ralph Fletcher, the Reunion chairman, know so that a formal invitation can be issued, in advance of the party. It was also suggested that a great deal of interest and enthusiasm would be developed if everyone would bring whatever mementos he has of the four years at the Institute. Sandy Claussen indicated that he would have his boat on hand in the bay, and will plan to take all those who would like to come on a trip around the harbor. Harold Russell, as chairman, and Nat Warshaw and Bob Crosby as committeemen, volunteered to arrange transportation for all Classmates who so desire from Boston and vicinity to the Oyster Harbors Club and back to Boston. Tom Berrigan agreed to serve on the Reunion Committee, and the rest of the fellows indicated that they would write letters to friends within the Class plugging for a maximum attendance at the Reunion. From the wonderful response to date, it is evident that many of the fellows are plugging hard for a good attendance. (It's March as this column is being written, so it is too early to quote figures. However, we can say that the 100 mark becomes closer every day, and appears to be easily attainable.) Our publicity Chairman, Steve Brophy, has given you the full and colorful story of the weekend activities. You know the dates and the place — June 8, 9 and 10, 1956, Oyster Harbors Club, Osterville, Mass. You know that it is going to be a wonderful weekend. Go, spread the good word, so that all Classmates will follow the path that leads to our 40th, that they may know good fellowship at its best.

It is with considerable regret that we close this column with the obituaries of two of our Classmates: "Services for Arthur L. Gupitill, 64, President of Watson-Gupitill Publications, Inc., 24 W. 40th St., N. Y., art publishing firm, will be held at 11:00 a.m. Saturday at First Congregational Church, Bedford Park. (March 3). Mr. Gupitill died Tuesday in his home, 37 Brownley Drive, after a long illness.

Mr. Gupitill taught at the Brooklyn Museum and Pratt Institute, from which he was graduated in 1912. He was a partner in Bearse and Gupitill, architectural designers and illustrators from 1919 to 1925 and a free-lance design specialist and consultant from 1925 to 1937. Surviving are his wife, Mrs. Ethel M. Weir Gupitill; a son, Arthur Leighton Gupitill Jr.; and two grandchildren." And, "William T. Kniesner, sixty-one, a patent lawyer with offices at 155 E. 44th St., died yesterday (March 2) in Lenox Hill Hospital. He lived at 645 Shore Acres Drive, Mamaroneck, N. Y. Mr. Kniesner was born in Danbury, Conn., was graduated from Massachusetts Institute of Technology and obtained his law degree from Fordham University. He was a veteran of World War I. Surviving are his wife, Mrs. Irene Gerlach Kniesner; a daughter, Miss Marian Kniesner; a son, William T. Kniesner, Jr.; two sisters, the Misses Emma and Wilma Kniesner." The condolences of our Class have been sent to the families of these deceased members.

We'll be looking forward to seeing most of you fellows in person at the Reunion next month. In the meantime, all best wishes for continued good health and much happiness. — RALPH A. FLETCHER, Secretary, P.O. Box 71, West Chelmsford, Mass. HAROLD F. DODGE, Assistant Secretary, Bell Telephone Labs., 463 West St., New York, N. Y.

• 1917 •

The Class had its usual pleasant pre-Mid-Winter Meeting get-together at the apartment of Ray Stevens. Present and accounted for: Rudy Beaver, Ken Childs, I. B. Crosby, Brick Dunham, Stan Dunning, Jim Flaherty, Heinie Gartner, Ed Hutchinson, H. E. Lobdell, Al Lunn, Art Paul, John Platt, Harry Sandell, Tubby Strout, Ham Wood and Jack Wood.

From Bill Mehaffey: "Your birthday letter reached me here in Beaufort, S. C. and were it not that I have enjoyed other Classmate's stories I would not bore you with mine. After leaving Tech I was commissioned in the Construction Corps of the Naval Reserve and served until the end of the war at the Algiers Naval Station which is, incidentally, across the river from New Orleans.

Rusty King Robinson of our Class was also there. On the fake armistice day I was married to Lydia Howard Griffith of New Orleans, formerly of Athens, Ga. After the war I helped organize a construction company for mechanical equipment in my old home town of Chambersburg, Pa., where we operated until 1933 when the depression got too much for us. In 1933 our family moved to Washington, D. C. where I entered the public works administration under Col. H. M. Waite '90. By this time I had five children, three boys, two daughters, and was extremely glad to have the job as an engineer examiner in the engineering division. Later it was my good fortune to become chief engineer. In 1940 my old friend, I. B. McDaniel '16, then a captain in the Navy induced me to accept a commission in the Naval Reserve and to relieve him at the David Taylor Model Basin on January 20, 1941, as war seemed imminent. At the David Taylor Model

Basin, the Navy laboratory outside of Washington, D. C., I served as executive and production officers until I retired in 1947 as captain, after a bit of ticker trouble. While in Washington I served as president of the M.I.T. Club of Washington for one year. My three boys all served in the armed forces, two in the Army in the Pacific area and one in the Marine Corps, and my wife served as a Gray Lady at the Walter Reed Hospital in Washington, D. C. My eldest daughter lost her husband in the Pacific, but otherwise there were no casualties in the family.

At present my eldest son is in business in New Orleans, my second is an engineer with the Bell Telephone Company of Charlotte, N. C., and my youngest is studying art in New York City. Both daughters are married, one living in Bethesda, Md., and one in Greencastle, Pa. In 1948 I joined the J. E. Greiner Company, Consulting Engineers of Baltimore, Md., and was sent to Harrisburg, Pa. to manage their interests with the Pennsylvania Turnpike Commission. In 1953 further heart trouble developed and yours truly retired, spending summers in Caledonia, about 15 miles west of Gettysburg, Pa., and winters in Beaufort, S. C. The latch key is always out for any Tech man. My wife and I enjoy a small amount of golf, fishing and hunting, with a judicious amount of bridge playing. We used to enjoy tennis. The last Tech man I saw was I. B. McDaniel who, with his lovely wife, Kathryn, came by to see us at Caledonia this past summer. To say that I am looking forward to our next Reunion is putting it mildly.

Jim Flaherty: "Around 1914 I was architect for the first addition to what is now Blinstrub's Village, reputed to be the largest night club in the country, with top flight performers' names constantly on the marquee. My first job. During the course of last year the Hightstown Rug Company got into production with their unit number one velvet plant, which is the first of eight units all to be integrated. The years between saw the white lines on blue paper turn into churches and schools. The first "baby" gives pleasure to many and the last one is a dream come true — streamlined from entrance to exit and all done at the elbow of Fred T. Davies '41, wet basin Architect, who turned his knowledge of collision mats into living room Broadloom, with colors to suit all tastes and prices to suit all purses. I think if he were asked in a nice way he would give a running commentary on the "Development of an Idea" and illustrate it with photographs. Anyway make them big, I say. When one walks the length of an 80 foot Broadloom it makes one feel good. When it is done in calculated progression, in minimum time, it makes the owner feel good."

C. C. Coakley writes: "A few notes are quite timely, for after 33 years with National at Buffalo, N. Y., following five years at Marcus Hook with the same outfit, I am currently in the process of pulling up stakes in Buffalo — after ten years as Plant Manager — and moving to our General Office at 40 Rector Street to be Director of Operations of the Buffalo, N. Y., Moundsville, W. Va., and Chesterfield, Va. plants. Late in January we are

moving to Upper Saddle River, N. J., to join the commuters that spend a large portion of their lives getting to their offices in New York on trains, ferryboats or other highways, subways, tunnels and other places where traffic gets all messed up. I am now looking for a place to use an outboard motor that the gang gave me as a farewell at Buffalo and also some good fishing locations equal to those around Lake Erie, Niagara River and Georgian Bay, Canada. Doubt if I will make Cambridge this June, but sure hope to get to our 40th next year."

Haig Solakian: "Frankly, I find it not so easy to write about one's life or experience burdened with commonplace everyday routine, and not spiced with the unusual or spectacular. Of course, I always enjoy reading the activities of Classmates, and since the new procedure calls for a report, I do not wish to be the exception. Upon completion of my graduate work in 1924, I took a vacation trip abroad, and while visiting Egypt, married Rose Nazar of Alexandria. We have two daughters, Dorothy and Nancy. Both are now married. I have two grandsons by Dorothy. At least one of these I am earmarking for M.I.T. About my business, after nearly 25 years as metallurgist in various capacities with different companies, I organized, about ten years ago, the Crown Chemical Corporation, engaged in the development and manufacture of heat treating salt baths. Eight years ago I took over the Bellis Company, a 35-year old concern, specializing in the design and manufacture of heat treating furnaces, gas or electric. The two companies supplement each other and adequately cover the heat treating field. Both companies are located in Branford, Conn. My outside interests are limited, and center in the church and charity organization activities."

Lucius Hill says: "It must be admitted you get out your letters at an appropriate time, for I opened yours of February 9 this morning and it turns out this is the precise day upon which I reach the ripe age of 61, to wit February 13. As is the case with some others, I joined the Coronary Club back in 1948 and thereafter got orders from the Doc to retire at least partly; so now I am a ten to four boy at the office and refuse to hurry for anyone. The "office" consists of being director, executive committee, and treasurer of Eastern Utilities Associates, a holding company which produces kilowatts for Brockton, Fall River and the Blackstone Valley in Rhode Island in such cities as Woonsocket and Pawtucket. Also recently got kicked upstairs to Chairman of the Board of Fall River Electric Light, and try to help run the Franklin Savings Bank, Boston, just to retain a grasp upon thrift inculcated in me during my years at M. I. T. — which turned out to be one more than the allotted four. Incidentally, the Blackstone Company also serves the area with natural gas, recently converted from water gas, and considerably less complicated as a means of providing John Q. Public with B. T. U.'s."

"Domestically it should be noted this graduate of 1917 has not been idle, possessing a wife beyond compare who came from Chicago, and with whom by a series of minor compromises, life has been most

comforting since our wedding day, of which I have a careful record, in the Fall of 1926. In re such small compromises mentioned, it should be observed she and I have diametrically opposite ideas of how to get from one place to another in an automobile; so we compromise by going her way. Two children are ours, one of each kind, still seeming to us to be little ones, but much to our surprise, Kitty is now and has been for some time Mrs. John K. Stanton of Marion with children two, Seabury II and John K. Jr. Either can wear this grandfather down to the bone in exactly four minutes by the clock, the first named being four and one-half and the second, two and one-half. Son L. T. H. Jr., of a classical turn of mind, elected Yale from which he graduated in 1954, now being second year in the medical school, McGill University, Montreal. Given two years more there, two at interning someplace and two in the Navy, it would seem a fair bet he will get his shingle hung out finally in 1962 or 1963. Being six feet four and 210 lbs. or more, it seems highly unlikely any of the old man's Classmates will start getting fresh with him, that is the old man, if at the same time the said young man is on the premises. Now having exhausted about all the English Arlo Bates was able to instill into his frame, admittedly some years ago, the writer will close with the factual comment that he enjoys a cocktail or two at precisely 6:15 p.m. of an evening, every evening, and dreads the possibility that at some future time he may have the great misfortune to be in a place at that particular time of day where for one reason or another such an exercise is not possible." [Editor's Note: Reticent Secretary Stevens omits mention of his own recent election to the presidency of Arthur D. Little, Inc.] — R. S. STEVENS, *Secretary*, c/o Arthur D. Little, Inc., 30 Memorial Drive, Cambridge 42, Mass. W. I. McNEILL, *Assistant Secretary*, 270 Park Avenue (5A), New York, N. Y.

• 1918 •

The more obvious testimony of deserved reward does not always come to those who deserve it. Consequently there are murmurs of pleasure over the tardy recognition which has been coming at last to Johnny Markham after long years of solid effort. The U. S. Air Secretary has presented him with an award for exceptional service in connection with his direction of the Supersonic Wind Tunnel of the Aeronautics Department at M.I.T. Just what his imaginative struggle toward more penetrating perceptions has contributed to our Air Force is classified information. John's deserving the recognition is not.

Grenville L. Hancock, who was eastern representative of the Associated Plywood Mills, Inc. died in Belmont early in January. He had been fairly prominent in Boston business and financial circles. He was a director of Northeast Airlines, a trustee of the Home Savings Bank of Boston, an incorporator of the North Avenue Savings Bank of Cambridge, a trustee of the Hamilton Trust Company, and a former director of the Evans Products Corporation. That is producing quite an awesome record for a lad born close to the

gopher holes that surrounded Fargo, N. D., in the 1890's and doubtless still shelter many a small burrowing rodent of genera *Geomys Thomomys*. (Having as a boy lived six years in South Dakota I remember them well. I even remember weeping for the good that might have been when my father deprived me of one I had caught for a pet.) Grenny served in World War I, lived most of his life in Massachusetts, and was active in the Belmont Royal Arch Chapter of Masons, the Lafayette Lodge of Perfection, and the Aleppo Temple.

Occasionally we have cause to ask the brethren for news of missing members who, following their separate stars (astronomical not Hollywood) have moved to parts unknown with the result that any mail addressed to them comes back marked, "address unknown." If you have information concerning the whereabouts of any of the following, please take time for a quick postcard addressed to your scribe. We are beating the bushes for signs of the whereabouts of Harold N. Blount (last known address follows each name) 130 Campus Road, Snyder 21, N. Y.; Jose Pasos Dias, Ave Los Higueroes, Comerterio, Caracas Venezuela; Earl A. Greenleaf, P.O. Box 25, North Calais, Vt.; William E. Hilbert, 6134 Ocean View Dr., Oakland 18, Calif.; R. Parry Kennard, 53 East 92nd St., New York 28, N. Y.; Harold L. Miller, 26 Cortes St., Boston 16, Mass.; Arthur A. Obert, 1022 East Lake Rd., Erie, Pa.; Frank L. Philbrook, 734 Bush Street, San Francisco 2, Calif.; Roy Wanser, 1420 No. Clarendon Ave., Chicago, Ill.; Capt. Cullen H. Want, 1853 So. Highland Ave., Los Angeles, Calif.; L. F. Woodruff, RC of S, G2 Intelligence USA, Washington 25, D. C.; Masaki Ito, Grand de Hotel, Belo Horizonte, Mines Geraes, Brazil. — F. ALEXANDER MAGOUN, *Secretary*, Jaffrey, N. H.

• 1919 •

Paul Blye wrote this month to say that he'd changed his address to 53 Dale Drive, Chatham, N. J. He went on to say "we are building a little farther out in Jersey, near the Murray Hill Bell Laboratories. I expect to transfer operations there within the next year. Glad to have had a chance to visit with you at the Feb. 2 M.I.T. dinner."

Sherwood Page writes from Preston Terrace, Marshfield, Mass., "I've been out of active business for almost three years, settling in Marshfield, Mass. for a second breath at 58. Little activity except from a car from Maine to Florida. Family grown up and on their own. Health excellent but ambition low. This year should find me interested in something new, but it's surprising how a few years of just enjoying living can give one an appetite for more of the same."

Aubrey Ames writes that "after 27 years of foreign residence and 8 years back in the U.S.A., have just returned from a three month Busman's Holiday in South America." Aubrey is now retired for the second time.

Harold Marshall was promoted to Colonel in the Air Force Reserve in 1954 and was elected Mayor of Palmyra, N. J. for two years commencing Jan. 2, 1956. Congratulations on both accounts, Harold.

A clipping from the *New York Times*, January 19, 1956 about Charles A. Chayne came to our attention. Charles, who is vice-president in charge of the engineering staff of General Motors was written up in an article entitled "Expert Advises On Buying a Car." According to Charles a man with modest means and a large family would do best to buy a used car, one year old, which sounds like good advice to us. The article goes on to say that Charlie "still believes in the complicated vehicle of his youth and now collects these vintage vehicles. Of the eighteen cars in his garage in Bloomfield Township, Mich., 14 are real old." Charlie is also quoted as saying that he thinks "young engineers of today ought to stick to engineering instead of falling for the quick-money jobs of sales and advertising." A lot of us echo those sentiments, but many have gone into some human values work. We all agree that the engineering and scientific training helps for any field of endeavor required to make one happy.

The M.I.T. Club of New York is a good value at \$10.00 per year for those who can use it. — EUGENE R. SMOLEY, Secretary, 385 Madison Ave., New York 17, N. Y.

• 1920 •

A few days ago I received a very nice album of snapshots of our 35th Reunion from Karl Bean. I noticed Karl busily snapping away at the Sheldon House and I had concluded either that he had forgotten me or that the pictures didn't come out well. I am glad to say that neither conclusion was true. If anyone would like a look at these pictures I'll gladly loan them or mail them, so long as I get them back.

Ed Bigelow stopped in to see me but, I was out. Ed lives in Portland, Me. I hope he tries again as I haven't had any news of him since graduation.

Carleton Blanchard has been elected a director of the First National Bank and Trust Company of New Haven. After graduation, Carleton worked in the West Virginia Coal Mines for two years before joining the Capitol City Bank of Charleston, W. Va. He then became Tidewater Manager at Hampton Roads, Va. for the Wyatt Coal Sales Company. Five years after leaving M.I.T. he went to New Haven to engage in the wholesale coal business and in 1935 he started the Wyatt Coal Sales Company and became president of that company, changing its name to Wyatt, Inc. He has also served as vice-president and treasurer of the United Terminal Corporation. Carleton has two married daughters and a son who is associated with him in business.

Our own Flossie Fogler Buckland was prominently mentioned in a recent issue of the *Wall Street Journal* in an article on the "Slide Rule Sisterhood." Flossie was described as "a gray haired grandmother who specializes in heat transfer systems and manages nicely to combine family with a career." The article goes on to say that Flossie joined General Electric Company fresh out of M.I.T., left in 1925 to rear a son and daughter but returned in 1942 to do war work. After VJ Day she cut down on her workday to spend some time with her children, but now that both

children are married she's back at GE full time.

Another Classmate prominently in the news is Bob Tobin who was the subject of a feature article in the *Bridgeport Sunday Post*. The article says, "A veteran of ten month long hunting trips, Mr. Tobin holds an enviable reputation among sportsmen." His standing among industrialists is equally enviable for he has been the president for the past eighteen years of Tilo Roofing Company. Bob graduated from hunting gophers and pheasants to hunting elk, deer and antelope in the vicinity of Jackson Hole, Wyo. Not being satisfied with that, he journeyed to Alaska to hunt Kodiak bears, considered among the most vicious and dangerous of all animals. In addition to hunting trips in Alaska, Bob has made five hunting trips to Mexico for jaguars, panthers and the like. He has been back there again this year going into the hinterland hundreds of miles from civilization. Mrs. Tobin accompanied him on one of the trips to Mexico and I wish you could see the pictures of them accompanying the story. Perhaps Bob will bring some of his pictures to our next Reunion. — HAROLD BUGBEE, Secretary, 7 Dartmouth Street, Winchester, Mass.

• 1921 •

Next month our gala 35th Reunion opens at the Sheldon House, Pine Orchard, Conn., on June 8 and continues through June 10, when we will all travel to Cambridge for the big annual party of the Class of 1921, which is always held just before the Alumni Day banquet, coming this year on June 11. This is probably the last time we can remind you of these two big events via The Review Class Notes. Jot the dates down on your calendar now and be sure to make arrangements promptly to attend, so you will be among the many enjoying these latest additions to our long series of outstandingly successful gatherings of the Class. Reunion Chairman Mel Jenney has just phoned that all is in readiness to make the most use of the unsurpassed facilities of the Sheldon House for golf, tennis, swimming, sailing and all manner of vigorous activities, as well as full use of the wide verandas and rolling lawns overlooking Long Island Sound, which provide ample opportunity for most of us to relax and enjoy the lower energy level routine of visiting with each other while comfortably seated. Warm spring weather and hearty welcomes from everyone await your arrival, whether it's your first attendance at a Reunion or you have never missed one. We all want to see you and have you join in the fun and fellowship of being back with old buddies. Come this year of all years before it is too late. For special information on the Reunion and related matters, address inquiries to Melvin R. Jenney, 35th Reunion General Chairman, in care of Kenway, Jenney, Witter and Hildreth, 24 School Street, Boston 8, Mass.

You now have the second and third Reunion mailings. In the second mailing, Ted Steffian, our Assistant Secretary and member of Mel's committee, outlined the Pine Orchard and Cambridge programs and arrangements. Listed were the names

of those who had returned the questionnaire and indicated that they were planning to attend. As of the date of preparation of these notes, early in March, more than 100 Classmates are now planning to come to Pine Orchard. To the earlier list are added the names of Laurence B. Davis²², Ralph E. Ferdinand, Harry A. Goodman, Alexander D. Harvey, Joseph G. Kaufman, Donald B. McGuire, Charles F. Parker, George W. Pollock, Harry M. Ramsay, Herbert W. Reinhard, William H. F. Rose, Jr., Charles A. Williams and A. Royal Wood. As noted in Ted's letter, Irv Jakobson, of the Reunion Committee, has asked that yachtsmen in the Class be specially invited to bring their boats and make use of the fine harbor at Pine Orchard, right out from the Sheldon House. Those wishing further data about moorings, charts, etc., should write to Irving D. Jakobson, President, Jakobson Shipyard, Inc., Oyster Bay, N. Y. It should be noted that Reunion mailings are sent out for us by M.I.T. only to the official Alumni Association list of names of members of the Class of 1921. Members of neighboring classes who were associated with us and who wish to receive these mailings are asked to write to C. A. Clarke, Secretary-Treasurer, M.I.T. Class of 1921, 215 Linden Avenue, Glen Ridge, N. J. Again we ask you to complete the questionnaire form if you have not already done so and return it at once to your Secretary, whether or not you will attend the Reunion, in order to aid the Reunion Committee in arranging for accommodations and also to keep Class and M.I.T. records up to date. Many thanks for your cooperation.

The last mailed notice, which you should have received a few weeks ago, included reservation blanks which you should have completed and returned by the time these notes appear in print. Write at once to Edwin T. Steffian, Architect, 11 Beacon Street, Boston 8, Mass., if you haven't received or made your reservation. Ted and Chick Kurth have set up the Class party in Cambridge on Alumni Day, Monday, June 11, with some variations from previous years because of the on-campus locale for all Alumni Day events, including the barbecue dinner to be held in the Rockwell Cage. Last minute details are contained in the final mail notice and will be posted on the bulletin board in the Rogers Building in time for the Monday morning registration. You should send your application for Alumni Day events direct to M.I.T. and not to the 1921 Reunion Committee.

Among the special events being made to promote attendance at the Reunion are those of Hexalphas George Chutter and Rufe Shaw, who have invited "Mr. Course VI-A" himself, Emeritus Professor William H. Timbie, to be present with this first VI-A group as he has at all previous five-year gatherings of the Class. At this writing, it is expected that Bill will be with us, as usual. For the record, he and Mrs. Timbie are this year celebrating their own 55th Reunion. Nine of the living members of the initial VI-A group have so far indicated that they plan to be present in June. With Bill, that means that 40 per cent of the Course members will attend, a high figure for all

other courses to shoot at. Bill Loesch and Miles Zoller are endeavoring to get 100 per cent attendance of the Betas.

Dr. August B. Kinzel, Vice-president in Charge of Research, Union Carbide and Carbon Corporation, New York City, has been signally honored by his nomination as an Alumni Term Member of the Corporation of M.I.T. for the next five years. Gus joins Bill Sherry as the second member of the Class of 1921 to be recognized in this distinguished capacity. A native of New York City, Gus has been with Union Carbide and its subsidiaries in various executive capacities since 1926. He was graduated with us in Course IX-B and also holds a bachelor's degree from Columbia, a doctorate in science from the University of Nancy, France, and an honorary doctorate in engineering from New York University. His memberships include the American Institute of Mining and Metallurgical Engineers, American Society for Metals, American Welding Society, Engineering Foundation and the Welding Research Council of which he has been vice-president, director and chairman of the board. He and Mrs. Kinzel have a son, August, Yale '58, five married daughters and nine grandchildren. A sailing enthusiast, we hope Gus will adopt that method of travel when he comes to the Pine Orchard Reunion next month.

Albert H. Wechsler, Vice-president and general manager of the Converse Rubber Company, Malden, Mass., and a director of the Hodgman Rubber Company, has been elected to the board of directors of the Rubber Manufacturers Association. A letter from Chick Kurth, our 1921 representative on the Alumni Council, lists the following as among those present at the Midwinter Alumni meeting in Cambridge when it was revealed that Mr. Amity, the anonymous donor to the Amity Fund, is Alfred P. Sloan, Jr., '95; Ed Clark, Chick Dubé, Roy Hersum, Mel Jenney, Joe Kaufman, Chick Kurth, Win Luke, Dick McKay, Phil Nelles, Lark Randall and his son, Donn, of Amherst, Herb Reinhard, Steve Seamos, Ted Steffian, Harold Stose, Dinnie Whelan, Ev Wilson and his son, Everett, Jr., Bowdoin '53.

The Reverend Williston Wirt, one of the four ministers in the Class of 1921, has received a unanimous call to become minister of the Pearl Harbor Community Church in Honolulu, Hawaii, and will commence his pastorate there on June 1. Harry Field and Fred Kingman of Honolulu, please take note. Dr. Wirt tendered his resignation to the board of directors of the North Congregational Church, Berkeley, Calif., to take effect following the Easter services. He and Mrs. Wirt left for a two months' tour of Europe, where he has been invited to preach at the American Church in Paris. Dr. Wirt is leaving the church that his father founded 63 years ago. He has served there since 1949 and was previously pastor of the Chula Vista Community Church in California and the First Congregational Church in Eugene, Ore. For three years during World War II, he was a lieutenant colonel in the Chaplain Corps, U. S. Air Force Reserve. He had been Regional Chaplain of the Civil Air Patrol for the Pacific Region. A member of the Class of 1921 in Course XV, he received his M.A.

in religious education from the College of the Pacific and the D.D. degree from Willamet University. He has been the coordinator of a daily radio program, "The Morning Watch," and chairman of Boy Scout leadership training and the "God and Country" award of the Mt. Diablo Council which awarded him its highest honor, the Silver Beaver, for distinguished service to boyhood. Dr. and Mrs. Wirt have two sons, Eliot, a mathematics teacher at San Francisco State College, and Williston, Jr., a biology teacher in Bakersfield, Calif., high school, and two grandchildren. Our best wishes on the new pastorate.

Good wishes also go to a second minister of the Class on his new assignment. The Reverend Everett R. Harman, Course IV, is now pastor of the Church of Christ the King, Cedar City, Utah, of the diocese of Salt Lake City. A licensed architect, instructor in psychology and vocational counseling, member of the American Institute of Architects and the National Vocational Guidance Association, he received his M.A. degree from St. Louis University in 1932. He was formerly Chaplain of the Holy Cross Hospital in Salt Lake City. Arthur G. Wakeman is president of the Coosa River Newsprint Company, Coosa Pines, Ala. Daughter Frances attended Smith College. Merrill A. Youtz is principal chemist, Battelle Memorial Institute, Columbus, Ohio, engaged in research. Formerly with the Drackett Company in soybean research and research director of the Northern Paper Mills, he is a member of the American Chemical Society. Son Robert was graduated from Oberlin, Dorothy and Joan from Ohio State and Howard is a student at the University of Ohio.

Dana E. Kepner maintains the appropriate address he has had as far back as we can remember, 1921 Blake Street, Denver 2, Colo., where the sign over the door proclaims that the Dana Kepner Company, under the careful supervision of its genial president and manager, purveys the best in water works and sewerage equipment. A Mason and Shriner, widely known for the excellence of his work in the field of his hobby, photography, he is active in many local projects and organizations. A member of the American Society of Civil Engineers, chairman of its Committee on Juniors and chairman of the Rocky Mountain Section of the American Water Works Association, he is president of the Colorado Society of Engineers and also of the Colorado Engineering Council. Daughter Barbara attended Colorado College and son Harrison went to the University of Colorado. Grandson Scott Darrell is a year old. Goodman Mottelson is plant superintendent in charge of production for the Wilson Laboratories, Chicago, Ill., and makes his home in La Grange, Ill. He and Mrs. Mottelson have three children. Ann, who was graduated from the University of Iowa, is married and has a daughter. Ben has his bachelor's degree from Purdue and a doctorate from Harvard. He has two sons and a daughter. Greta attends Miami University.

Saul M. Silverstein recently addressed the Springfield, Mass., meeting of the National Office Management Association on the subject of "Operations Understand-

ing." Ernie Henderson received national newspaper recognition in the syndicated "Their Birthday Today" item on the occasion of his March 7 anniversary. Our Class Agent, Ed Farrand, squire of the Colonial Plantation, Leesburg, Ga., has come up with another of his most stimulating and appealing letters, exhorting all of us to support the annual Amity Fund with added generosity in this 35th Reunion year. As noted on the gift card, you can now designate that your contribution be specifically used for scholarships or for medical sciences at Technology, if you wish. A subscription to The Technology Review for the 1956 publication year goes to all contributors. Send in your card now.

Thomas B. Davis is president of the Davis Company of Memphis, Tenn. He is also president of the Metropolitan Board of the Memphis Y.M.C.A. and a member of Rotary, the Memphis Country Club and the Tennessee Club. He is married and has no children. Winter Dean is now chairman of the board of the General Trading Company, St. Paul, Minn. He and Mrs. Dean, the former Muriel Smith '23 have five children and thirteen grandchildren. Laura and Alden attended the University of Minnesota; Winter, Jr., went to Yale, where Edwin is now a student; and William was graduated from Macalester College. Henry R. Hatch is manager of the Euclid Avenue Branch of the Cleveland Trust Company, Cleveland, Ohio. A trustee of the University School, the Lakeview Cemetery and the Cleveland Institute of Art, he is also active in the University and Kirtland Clubs. Son Henry attended Yale and the Harvard Business School and William attended Williams.

It is with heavy heart that we record the sudden passing of Norman Williams Hunter of Fair Lawn, N. J., on October 14, 1955, and extend sincerest sympathy to his family on behalf of the entire Class. Associated with us in Course I, he was an Apprentice Seaman in the S.N.T.C. during World War I. He had long been associated with fire protection services and was most recently an engineer with the Fire Insurance Rating Organization of New Jersey in Newark, N. J.

Through the courtesy of Mrs. Fairbanks, we are able to supplement and correct the data published last month on the passing of Robert Dow Fairbanks on December 25, 1955. Born in Boston on June 27, 1896, he attended Newton schools and was the secretary of the Newton High School class of 1915. He entered the Institute with the Class of 1919. In 1918, he went into the armed forces and was trained as a pilot in Army Aviation. After World War I, he joined the Class of 1921 for the new course in aeronautical engineering and was active in the formation of the Aeronautical Engineering Society. He became associated with the Western Electric subsidiary, Electrical Research Products, Inc., as a field engineer and continued with its successor, Altec Service Company, as branch manager and sound engineer until his retirement in July, 1955. He had been teaching industrial electronics at Wentworth Institute, Boston, since last September. He was an ardent supporter of the Boston Symphony

Orchestra and the Massachusetts Audubon Society. He is survived by his wife, Charlotte Tongas Fairbanks of Wellesley Hills, Mass.; a daughter, Mrs. Sarah Fairbanks Patch of Ft. Benning, Ga.; a son, David Reed Fairbanks, who was graduated from Worcester Polytechnic Institute and Pennsylvania State University; and three grandchildren.

Super urgent reminder: Make your plans right away to be with the Class at the Sheldon House, Pine Orchard, Conn., on June 8, 9 and 10 and in Cambridge on June 11. Whether or not you will attend, please return that completed questionnaire form to your Secretary today. Thanks!—CAROLE A. CLARKE, *Secretary*, Federal Telephone and Radio Company, 100 Kingsland Road, Clifton, N. J.

• 1922 •

Our congratulations to Ted Miller on his election to the presidency of The Alumni Association. It would be difficult to find a more worthy or capable person for that position.

Replies to the Reunion questionnaire sent out in February are being accumulated and analyzed and it is believed that the Reunion Committee will have a report available for inclusion in the Class Notes next month. All decisions by the Reunion Committee will be based on the actual replies received so if you haven't already sent in your marked up questionnaire please do so at once so that the Committee may receive the benefit of your views.

Walter M. Saunders, Jr. has recently been elected treasurer of the Northampton Cutlery Company in Northampton, Mass. Walt was a consulting chemist and metallurgist in Providence for 25 years. He joined Northampton as assistant treasurer and metallurgist in 1955, moving at that time from Providence to Northampton where he now lives in a recently purchased house on Ward Avenue. He is a member of Northampton Rotary Club, The American Society for Metals, The American Institute of Mining and Metallurgical Engineers and The American Society for Testing Materials.

Oscar Horovitz continues to give others the benefit of his knowledge of making movies. In January and February he gave a series of four lectures for the Boston Camera Club on basic motion picture photography.

Godfrey B. Speir, patent attorney for the Propeller Division of Curtiss-Wright Corporation and living in West Caldwell, N. J., sends the following interesting memorandum about his son David. "David, 16 and a sophomore in High School, is an active Boy Scout and Explorer, and just finished a one week tour in Washington, D. C. as the Area Two (New Jersey, New York and Puerto Rico) representative at the annual scouting 'Report to the Nation.' Twelve selected scouts make this annual pilgrimage, and the program is set up so the lads are kept very busy, but have a lot of fun and get a concentrated dose of experience in civics, public speaking and 'all that sort of thing' as David puts it, including an appearance on 'Arthur Godfrey and his Friends' TV show. In a short speech which Dave was called on to give on his return, it was very gratifying to learn that

they not only had a good time and a liberal education, but the idealism of the movement was fully appreciated and due thanks were tendered to the Scout people and organization for the privilege of being a participant in the special program. I was particularly impressed with the scope of all the boys chosen—they are all not only zealous scouts, but are athletes, good students and lads with a number of outside interests, such as church work, music, dramatics, debating, etc. It has been quite an experience for Mrs. Speir and me, as well as for Dave. Looks as though he will be another technical bloke as he wants to go to M.I.T. He even may be another patent attorney, who knows. I suppose it seems a bit bizarre for me to be talking about a 16 year old, when probably most of the Classmates are grandfathers by now, but I got a late start." And finally, with respect to Curtiss-Wright, he says, "And don't let anyone think that propellers do not still have a prosperous future!"

The belated news of the death of J. Lincoln Dodson of Kingston, Pa., has just been received. Dodson died October 7, 1955 but no other details are available.—C. YADLEY CHITTICK, *Secretary*, 41 Tremont Street, Boston, Mass. WHITWORTH FERGUSON, *Assistant Secretary*, 333 Ellicott Street, Buffalo, N. Y.

• 1923 •

Dr. Emil D. Ries, X, retired as general manager of Du Pont Company's Polychemicals Department on January 1. He was succeeded by Robert L. Hershey, X, about whom there was a short biography in last month's notes. Dr. Ries, who joined Du Pont 25 years ago, suffered a heart attack last September. He has had a normal recovery but on advice of his physician, decided to retire. (Emil, we wish you the best of health and happiness in your new leisure. May you have time to do the things that you never have had the opportunity to do before.) Born September 7, 1900, Dr. Ries graduated in 1920 from the University of Chicago with a B.S. degree in Chemistry. He received his master's degree from California Institute of Technology and his doctor of science degree from M.I.T. in 1926. Before joining Du Pont, he was professor of chemical engineering at Pennsylvania State College. In 1924 he married Ione Cook of Oceanport, N. J. They have two married daughters and live at 4603 Weldin Road, Wilmington.

Other notes are scarce this month. All evidence indicates the Class members are making plenty of news but being such modest fellows, they hesitate to tell the rest of the Class about their exploits. That goes for your Secretary, also, who recently was the guest of honor at the Annual Dinner of the White Plains Chamber of Commerce. He was retiring as president. Art Carney was the entertainer and principal attraction.

How about sending in some letters? They will make it very easy to keep this column filled.—HOWARD F. RUSSELL, *Secretary*, Improved Risk Mutuals, 15 No. Broadway, White Plains, N. Y., WENTWORTH T. HOWLAND, *Assistant Secretary*, 1771 Washington St., Auburndale 66, Mass.

• 1924 •

This is one of those months when we're just loaded with interesting and intriguing information. Take the one about our Prexy, for example. Seems President Pret is a yachtsman but no bird-lover, at least not seagulls. An item from *Yachting* says the 12 ft. by 12 ft. top of P. H.'s power cruiser Novie appealed to the gulls of Five Mile River. (That's somewhere on the Connecticut shore). So, with his usual inventiveness, Pret "set up a forest of 8 ft. bamboo fishpoles along his deck from stem to stern, lashing them with marlin where necessary. Says it makes her look like a porcupine, but he hasn't had a gull aboard since he hit on the idea."

Then a round-robin letter arrived from our real deep-six sailor, Chief Engineer Henry F. Simonds. We've carried bits from Hank from time to time, but this one deserves the full treatment. It was written aboard the USNS Cache while his typewriter shifted back and forth with every roll of the ship.

"The ideas that many have of a ship are about as far remote from the truth as it is possible to be. With all respects to marine architects and Course XIII, a ship is a floating barn, cold and drafty in the winter time, hot as a hay loft in the summer. The ship rolls and the clapper valves stick.

"We come into port and get few hours in which to look the place over. Well, I have done that. I have climbed the Peak in Hong Kong, tossed coppers in the Well on Bubbling Well Road in Shanghai, seen Mt. Fuji, walked around in the crater of Vesuvius and seen Aetna and Stromboli in action. I have seen the Pyramids and the Sphinx, the Statue of Liberty and Alcatraz (opposites if there are any). I have walked the streets of Bagdad and shopped in the Bazzars (stores that you would not be seen in at home) and visited the Golden Mosque and the Blue Mosque (number two and three in the Moslem world), seen the tomb of Fatima who told the original Arabian nights stories, seen UR of the Chaldes in the distance, and Babylon in the distance. I have seen the Sultan of Johore and his golden state service. (I have often wanted to ask him how one of those gold knives cut a piece of tough meat on a golden plate). Incidentally, he is a great guy. I have talked with him. I have walked the streets of Singapore and Port Sudan. Got some sea shells there that were very colorful. Have been to the burning Ghat in Bombay and the Tower of Silence. Incidentally, one of my best adventures was one day in February I was in Bombay at the birthday of Buddha's right hand man. The Hindus went down to the sea to bathe. They didn't bathe. They took a few clothes off and splashed around a bit. A few people that owned cows brought them down to the beach. (Cows are sacred because they are assumed to be the mother of all, the first incarnation of the 33). People bought a handful of grass and were flattered when the cow ate it from their hands. They touched a cow before they went into the water. Some on the neck, the flank, but the most devout man of all stood behind the cow, put his hands together and prayed to heaven, and then

lowered his hands, put one on one side of her tail and the other on the other, and lowered his head and kissed her. Right then and there I decided that I needed a movie camera for no one would believe the story and only a movie camera would bring it out. I got one in New York next trip.

"I have been in Fiji, New Zealand and Australia, like both Australia and New Zealand very much. New Zealand (north island) is much like New England, dairy country, lots of stones in the fields. I have been around the world 14 times, crossed the Equator about 20, crossed the Pacific 75 or more times, and this year went to Alaska in the winter time.

"I made three trips to Manila with troops before the war and was on the way back, returning via Torres Strait between Australia and New Guinea, and was about on the Equator and the 180th Meridian when war broke out. We started to Samoa and were only a few hours away when Jap subs began using their radios, and so we got out of there and headed for Honolulu around Christmas Island. Destroyers came out and met us a day out. They were like angels from heaven, even though they dived and wallowed in the rough seas that did not bother us in the big ship. We brought the first load of wounded into Frisco on Christmas Day 1941. They were a sorry bunch. Broken legs and ribs and badly burned. We had mostly Navy wounded, the other ship had Army, I believe. Then we were armed and hauled troops to Australia, New Zealand and Fiji until finally the ship was sunk in the New Hebrides. You may have seen the picture of the sinking of the President Coolidge in *Life*. I was between the camera and the ship in one of the boats.

"I hauled about every type of thing during the war, from shells, torpedoes, nitro cake, bombs, submarine nets to freight cars, locomotives, gasoline, whiskey, beer and candy. I was in the second or third convoy, as far as I know, that made the run the full length of the Mediterranean. Had five motor boats and a coal burning tug for escorts. Next time got a cruiser and two destroyers, but they stayed only four hours and signaled enemy cruiser or cruisers in the vicinity and took off. The British don't run away from a fight, they were running into it. About nine in the evening we saw the flashes of gunfire and the bursting of shells which was steady and getting nearer until eleven thirty when the firing died down and finally ceased about one thirty in the morning. No sleep that night.

"The birds came over, 13 of them, and made two passes at the convoy. Only got one ship, which I thought was a poor showing for them. Off Bizerte, the ship in the next line, and one ahead got it, and the torpedo exploded her load of TNT. The ship behind was damaged and had to turn into port. She had sixteen men injured. That ship was the Francis A. Walker — a name you may have heard of.

"I was in Bombay when a shipload of ammunition blew up in the Queens Dock. The first explosion was 300 tons of TNT and the second, forty minutes later, 800 tons. This scattered burning cotton all over the city of Bombay, setting a fire

roughly three miles on a side. The papers said that quantities of grain were destroyed. Guess what I heard all night as those warehouses burned was popcorn. They took out the ships loaded with explosives first, then the most valuable, and the one I was on the next to the last. That was one of the major disasters of the world. Some 4500 persons were known to have been killed and nobody knows how many injured. Damage to the city was 300,000,000 U. S. dollars and does not include the loss of 14 to 18 ships, the docks and warehouses and the use of the port for about six months. The Burma campaign came to a standstill as a result. One ship weighing about 3500 tons was lifted up and set down on top of a warehouse 50 feet high by the tidal wave from the blast.

"I have been places and seen things, but you must remember that these are only a few hours after days of monotonous drudgery. In this respect my work is not much different from your own. I have taken advantage of the fact that I was in these places and seen things. In fact I make it a rule whenever possible to see something each place I go."

A card in late February showing "the fascinating hula, nature's rhythm, etc.," indicated that Hank had made Honolulu. He was in Alaska at Christmas, then to Japan. Probably home long since and off again by now. [Correction: Another card just arrived, dated March 10. He's in the West Indies!]

A clipping from a Mexico City paper, forwarded by Señor Lobdell, there for the Fiesta, shows an impressive lineup at the head table of the M. C. Sales Executives Club. Almost hidden by a bunch of flags, but definitely identified by the caption, was Clarence M. Cornish. From something called the Isle of Venice in Fort Lauderdale, G. Raymond Lehrer writes, "weather here is good. In another 10 days we start our cruise to the West Coast of Florida, then back through the Keys."

Back to more mundane things. In an article in *Steel*, John S. Davey says there's "a basic misunderstanding of the function of the nut and bolt." He should know. As vice-president of Russell, Burdsall and Ward Bolt and Nut Company he is the sales and application engineer for some 250,000 types and sizes of fasteners. In New York Dr. Anatole Gruher, chairman of the National Engineers Week committee gave a statement to the press emphasizing the need for a more proper use of the nation's present supply of engineers and scientists. In Boston, Herbert R. Stewart celebrated the same event by taking part in a radio broadcast. Herb is in charge of electrical engineering for N. E. Electric. He was interviewed by Bradford Washburn, famed mountain climber, who doubles as head of Boston's Museum of Science.

Headed "Century-Old Heritage," a piece in the *Nashua Independent* tells all about Blaylock Atherton, "who can trace his Nashua heritage back to the days of the Civil War period." Blay has not personally accounted for all this time, but he has "served citizens on a local, country and state level for more than a quarter of a century." Blay's list of accomplishments and affiliations is too lengthy for this

space, but you can call him Major, if you wish, (Governor's staff), and since he is vice-president of the N. H. Society, Sons of the American Revolution, that move to Nashua was evidently an after-thought.

So much for now. Be back next month, and hope to see many of you at the Institute on June 11, Alumni Day. — HENRY B. KANE, *Secretary*, Room 1-272, M.I.T. Cambridge 39, Mass.

• 1925 •

It is fortunate that the newspaper reporters get hold of some of our Classmates on occasion, for it provides the secretaries with information for The Review and also brings out points which our modest Classmates are too inclined to keep to themselves.

The guest speaker at a recent meeting of the Lowell Industrial Safety Council was Henry F. McKenna, Jr. "Mac" is supervisor of industrial and highway safety engineering with the Employer's Group Insurance Companies of Boston. He is a member of the executive committee and board of directors of the Massachusetts Safety Council. He is also on the research committee of the Association of the Casualty and Surety Companies as well as being on the governing committee of the Accident Prevention Bureau of the City of Boston Cab Association. We all knew "Mac" attended M.I.T. but he also attended Suffolk University Law School.

Another Classmate who has been on the speaker's platform recently is Willard Allphin of Salem, Mass., who discussed school lighting at one of the monthly meetings of the Connecticut Section of the Illuminating Engineering Society. Willard is with the Illumination Research Department of the Sylvania Electric Products Company.

Bill Steinwedell was in the Boston area recently in connection with a show being presented at the Somerset Hotel by Bowser, Inc. Bill's description of the show was such that your secretary was looking forward to seeing it, but other plans prevented his going. Ave Stanton, however, was able to make it.

It is with sorrow that the death of Dr. Richard M. Wick, Course X, must be reported at this time. The last address available on Dr. Wick placed him at Allentown, Pa. where he was with the research department of the Bethlehem Steel Company. — F. L. FOSTER, *Secretary*, Room 5-105, M.I.T., Cambridge 39, Mass.

• 1926 •

The reminder card that comes once a month from The Review states that this is the last issue of Class Notes before Reunion. Therefore, why don't I say "I'll see you in a few days" and let it go at that. However, there are a few items of news so let's get at them. George Cummings recently came back to Quincy, Mass. to attend the funeral of his father and while there the local newspaper wrote an article about his achievements. Gordon Spear has mentioned Classmate Cummings to me several times — Gordon came from Quincy, too, and both Gordon and George have achieved their successes in Michigan. I was never able to place George Cummings until I saw his picture in this newspaper article and I re-

membered him at once because he looks exactly as he did thirty years ago. Not many of us can claim that — some of us are just as happy not to look as undernourished as we did then. To get back to George Cummings — after '26 he went on to obtain his Ph.D. from University of Michigan in '34 and an M.D. from Wayne University in '42. He now heads the laboratories of the Michigan Department of Health. His crowning achievement is the development of a safe antibiotic that is specific for typhoid fever which now brings nearer the possibility of eliminating typhoid from the world. We hope George will make our 30th and hereby delegate Gordon Spear to see that he does. A clipping from an Atlanta newspaper tells of Duncan Crawford's elevation to executive vice-president of the Atlanta Gas Light Company and the photo is recognizable to one who hasn't seen him for some time but he does have a very much wider part in his hair than he did in '26. Duncan went to Atlanta in 1943 from Roanoke, Va. where he had been president of the Roanoke Gas Company and five other outlying gas utilities. During his ten years at Atlanta, Duncan supervised a three-fold expansion of plant facilities (from 20 to 60 million dollars). And by the way, Duncan is a New Englander but he could have a southern accent by now. We hope to find out in June. Bill Graves phoned just as we were turning in the notes to advise that Flint Taylor has decided to undergo a lung operation. He believes that this will hasten and assure his recovery from the illness that has been plaguing him for months. Interesting slant is that Dr. John Strieder '22 is performing the operation. Good luck old man because we want you at our 30th.

The other morning Bill Latham dropped into the office. As we have previously reported Bill is running the show at the tremendous St. Lawrence Seaway development. The engineering is being done in Boston and that was what brought Bill to town. He dropped in to talk about the Reunion but we asked a lot of questions about the seaway project and definitely put in on our calendar to visit Bill in 1957 and see this wonder-of-the-world at the advanced stage.

It is mid-March as we write these notes here at Pigeon Cove and our St. Bernard pup is now 5 months old. We weighed her yesterday on the large scales at the lobster market and she is now a solid 96 pounds, up 16 pounds from last month, up 41 pounds from the month before and still going strong but tapering off a bit. It's a little hard to believe that by the time these notes are published we will be gathering for Reunion because we still have snow on the ground. The Reunion committee currently has a notice in the mail and they will have follow ups out by the time you read these notes so I'll not duplicate their efforts. However, there are a few things I may comment about that probably will not be covered in the notices. In the first place, with apologies to Reunion Chairman Cedric Valentine (Gulf Oil) and Class President Dave Shepard (Esso), the best map of the area is put out by Shell and it is called their map of Boston and Cape Cod. If anyone coming from a distance would like one

of these maps drop me a note and I'll pick one up for you. Our Reunion spot is located in what would be the shoulder, if you think of Cape Cod as being a man's doubled up arm. Chatham is at the Elbow and Provincetown the fist. In other words Coonamessett is not too far down. It looks like about 12 or 15 miles to the Hyannis Airport where the Northeast Airlines planes come in from New York and Boston. There is an airport right at the Inn that will take any company plane we have ever seen. The drive down from Boston takes a leisurely couple of hours and many of us will be driving down Friday afternoon with plenty of space available. We presume that everyone attending the Reunion will want to come back to Cambridge for Alumni Day on Monday which will give you an opportunity to reunite with many from other classes that were in the Institute with us. Also you will want to look around and see the many new buildings and facilities at the Institute. This year Alumni Day will be entirely on campus for the first time — no moving over to town to a hotel for the banquet. No one is looking forward to meeting all of you again more than your Class Secretary, as we hear from you directly or indirectly and then see you in the flesh but once in five years. There are so many to see and so much to discuss that it's a gala few days. Till then, Cherrio! — **GEORGE WARREN SMITH, Secretary, C/O E. I. du Pont de Nemours and Company, Inc., Elastomers Division, Room 325, 140 Federal St., Boston 10, Mass.**

• 1928 •

Bud Gray (Elisha Gray, Course XV) has been the center of one of the biggest industrial news stories of recent months. When formation of the Whirlpool-Seeger Corporation was effected in September, 1955, with Bud Gray as its president, news items gave credit to Bud for engineering the merger. R.C.A. and Sears, Roebuck and Company were reported to have a combined interest amounting to 40 per cent of the stock in the new 130 million dollar company. Home appliances manufactured by the company will bear the label "R.C.A. Whirlpool." Forbes magazine for August 15, 1955, carried an outline and discussion of the merger.

After graduation Bud worked four years with Sears, Roebuck and Company as store manager. Then he went with Cutler Shoe Company in Chicago where he became vice-president, remaining until 1938. Prior to his present post Bud was president of Whirlpool Corporation, St. Joseph, Mich. The Grays live in Benton Harbor, Mich., and have four children: Michael, Linda, David, and Elisha III.

Bud, you have the profound admiration of your Classmates and our best wishes for the greatest success in the important job you have undertaken.

George Palo sent in a clipping from The Knoxville News-Sentinel of Wednesday, February 15, 1956, entitled "Modest Elisha Gray II is Rising Industrialist" which gave an excellent review of Bud's business background and an interesting account of his present activities.

In his letter to Ralph Jope, George Palo wrote "... I'm rocking along about as

usual. Slight change of title at T.V.A. to head civil engineer to signify that I now have charge of all of our civil engineering design.

"At the A.S.C.E. convention in New York last October I enjoyed the M.I.T. dinner and Bud Wilbur's speaking. Ed Ure, Bob Cook and Terry Hurlbut were there. Now, come June, the A.S.C.E. has its national meeting here in Knoxville. As I'm president of our Tennessee Valley Section this year I'll have to do some of the greeting at that meeting. Hope some Course I men, from any class, show up. We'll do our best to show them a good time. . ."

George and his wife, Anne, are looking forward to our next big Reunion in June, 1958. — **GEORGE I. CHATFIELD, Secretary, 49 Eton Road, Larchmont, N. Y. WALTER J. SMITH, Assistant Secretary, 15 Acorn Park, Cambridge, Mass.**

• 1930 •

News about our Classmates has been rather scarce the last few months but all of a sudden we have received some information as well as some changes in address. From Rhode Island I hear that Joe Westell has been appointed as District Engineer in Rhode Island for the U. S. Bureau of Public Roads. Joe still lives in Fall River and although he started out as a hydroelectric engineer he has been a highway engineer for the last 20 years with the bureau.

From New Haven, Conn., we hear that Allan Intriligator was elected to the board of directors of Shartenberg's, Inc. Allan started out his career with Abraham and Strauss where he worked for 17 years in various executive capacities. He then operated his own management consulting firm for five years, servicing department and specialty store clients. Before taking up his present position he was vice-president, treasurer, and director of City Stores Company, a group of 11 major department stores.

The Boston papers carried a story about our master of ceremonies at the 25th Reunion, Jack Jarosh. He has recently been appointed director of the Cambridge Engineering Laboratory. This laboratory is a new facility of the Sterling Precision Instrument Corporation of Flushing, N. Y. Jack still lives in Newton and for those of you who have not heard of his career, he was the chief designer of the Navy Mark XIV Gyroscopic Gun-sight of World War II and was postwar director of the gyro laboratory which produced the floating integrating gyro, heart of today's most critical guidance and fire-control systems.

I had a letter from John Scheuren in Greenland. He said because of bad weather he was stranded in Greenland last June and was unable to get to the 25th Reunion. We are all sorry to have missed him. John spends a great deal of his time to the North in connection with design and construction of military facilities. This must be a fascinating experience, but I also imagine his wife and seven children living in Cohasset, Mass., must miss him.

Ted Bridge is still living in Wallingford, Pa. and for the last three years has been with the Catalytic Construction Company which designs and builds chemical

plants and oil refineries. We haven't heard from Ted for a long while and therefore I was very glad to hear what he was doing at the present time.

Every once in a while another author turns up in the Class of 1930, and this time it is John Parmakian. Besides many technical papers he has a textbook, *Water-hammer Analysis*, by Prentice Hall. At the present time he is head of the technical engineering analysis section, bureau of reclamation, in Denver, Colo. Apparently John got his master's degree from the University of Colorado after he graduated from M.I.T. He has three daughters and one son, with two of the daughters presently attending the University there.

Hal Spaans is still with the Bell Telephone Company in Pennsylvania. He has two children, and the older boy is getting close to college age. He has been recently transferred from the engineering to the personnel section of the plant department. Part of his job is instructing the newly made supervisors in the art of being good supervisors. He says, "Something different, but very interesting." — GEORGE P. WADSWORTH, *Secretary*, Room 2-287, M.I.T., Cambridge 39, Mass. LOUISE HALL, *Assistant Secretary*, Box 6636, College Station, Durham, N. C. RALPH W. PETERS, *Assistant Secretary*, 249 Hollywood Ave., Rochester 18, N. Y.

• 1931 •

Last month Gordon Speedie, your new Assistant Secretary, prepared the notes for The Review and at that time presented the various committees and their chairmen for our 25th Reunion. One of the nice things about the Steering Committee meetings is the fact that new faces appear at every meeting. It is odd that so many of our Classmates are located in this area and yet so little is seen of them. At the last meeting it was a pleasure to see Les Snowden. He is New England Service Manager of the Elevator Division, Westinghouse Electric Corporation, and is located in Boston. Another new face was that of Art Newell. Art is an assistant division head at Project Lincoln. Altogether we had 16 members present and after "old home week" was completed we settled down for a long session ending at 11:30 P.M. Nearly all of the program details were roughed out and it looks like a big weekend.

Starting on Friday evening there will be an informal dinner dance with music by Ruby Newman. That should bring back a few nostalgic memories of dances at Walker and across the river. Saturday morning various tours have been arranged and the Faculty Luncheon is scheduled for noon at the Faculty Club. At this luncheon it is hoped to have Dr. Killian present a short talk and there will be opportunity to meet faculty who were present at M.I.T. during our four years. After the luncheon the Class Picture will be taken. Following the picture it is planned to have Dean Harrison present one of his interesting talks and this will occur in the Kresge Little Theatre.

Saturday evening will be Class Dinner at the Parker House and this promises to be quite an affair. The ladies will spend the evening at the Pops and all transportation has been arranged.

On Sunday, following religious services in the Kresge Chapel, the caravan will start for Round Hill where Russ Pierce has arranged a real New England clam bake. Again transportation has been arranged. Following a buffet supper at Baker House the evening will be devoted to several short talks of current interest, arranged by Ken Germeshausen.

As you can see it promises to be an interesting and pleasant weekend and will be followed by Alumni Day, and its festivities, on Monday. Save the dates, June 8-11, 1956, and look forward to a real Reunion. — A. L. HESSELSCHWERDT, JR., *Secretary-Treasurer*, Room 1-125, M.I.T., Cambridge 39, Mass.

• 1932 •

Bob Hubbell is vice-president and director of sales for Minerals and Chemicals Corporation, Menlo Park, N. J. Bob held the same position for Attapulugus Clay, which became a part of the Minerals and Chemicals organization recently. Glad to see Bob move up to the same job in the combined company. Congratulations, Bob!

A note from Ted Lightgarn, 3665 La Calle Ct., Palo Alto, Calif., who is structural designer with J. J. Gould and H. J. Degenkolb, consulting engineers, San Francisco: "The great depression landed me in shipyards where I worked on warship design of structural and fittings details until 1949. In June '51 received M.S. in civil engineering (structural) from Stanford University, thus paving the way for starting on a new track. Still far afield from my Course XVI work, but like it very much."

Johnny Prague, who was graduated with us in course V, is a surgeon in individual private practice in Lexington, Ky. at 128 Shady Lane.

Col. Myron L. Williams, one of our graduate associates, sends the following news from Fort Huachuca, Ariz., where he is assistant deputy for the technical program at the Army Electronic Proving Ground (P. O. Box 617): "Have been out here at the Army Electronic Proving Ground for almost a year now. Never enjoyed a place more in my life, even the three years in Switzerland on attaché duty. We have a big program out here as any of the boys in the electronic field well know. My wife and I have a little house which backs up to old Boothill Cemetery in Tombstone. This is one of the more well-known mining towns of the old Southwest. Geronimo and his father Cochise roamed these parts, in fact Cochise's stronghold was in the mountains we see out our windows."

Charlie King is craft foreman at Carbide and Carbon's Nuclear Corporation plant, Oak Ridge, Tenn. His address is 1647 Highland Ave., Knoxville, Tenn.

Stewart Roberts is with the Allison Division of General Motors and is living at 5009 Washington Blvd., Indianapolis. He writes: "Design of aircraft gas turbines at Allison Division of General Motors Corporation. Completed 10 years this month (Feb. 1956). Remarried Oct. 10, 1953 to Kathryn Hartle Crawford. Have now two sons and four stepdaughters."

Milton Hathaway is an area geophysicist for the Atlantic Refining Company,

and lives at 4000 Hanover, Dallas, Texas. He's done some scouting at the Institute, as stated in a card I got recently from him: "No news. Just settled down to the routine life. Got quite a kick last December when I had an opportunity to go back to M.I.T. on a recruiting trip — trying to lure some of the new crop into our line of work. It's a far cry from the situation in '32 — competition for men is rough now. Found the changes amazing — my first trip back in 22 years. Best of luck."

A nice card from Francis Russell: "My group works on a few hydrocarbon pilot plant projects but mostly on engineering research — especially studies on fluidized solids contacting and handling. Have four children, ages one year five months to sixteen. Spend my spare time enlarging house here in Mountainside and building a summer home on Lake Mohawk in the mountains of North Jersey. Have been doing some sailing and waterskiing though. Don't have much spare time in winter due to recruiting activities, trying to find good engineers for Esso." Francis is section head, process research division, Esso Research and Engineering Company, and lives at 14 Bayberry Lane, Mountainside, N. J.

More notes from our graduate associates — William A. Riley, Douglas Hill, Me.: "Retired from active Navy duty in 1953 and reluctantly am coming to accept the readjustment difficulties of the 'old' (over 50) engineer." Clem Holbrook is secretary, buyer and seller for the Hotchkiss Brothers Manufacturing Company, Torrington, Conn. Lewis Fussell, Jr., is director of research for the Edgerton, Germeshausen and Grier, Inc., Las Vegas, Nev. Bill Laidlaw, major general, is commanding general of White Sands Proving Grounds, Las Cruces, N. M. Clint Stevenson is chief of the strength and weight section of Douglas Aircraft, El Segundo, Calif. Wesley M. Nagle is laboratory director, Burnside Laboratory of the Du Pont Company at Penns Grove, N. J. Gerner A. Olsen is associate professor of civil engineering at City College of New York, teaching graduate courses and writing a textbook on the strength of materials. — ROBERT B. SEMPLE, *Secretary*, Box 111, Wyandotte, Michigan. *Assistant Secretaries*: WILLIAM H. BARKER, 45 Meredith Drive, Cranston, R. I. ROLF ELIASSEN, Room 1-138, M.I.T., Cambridge 39, Mass.

• 1934 •

We are indebted to two of our regional secretaries for letters most welcome. Jean Raymond writes from Montreal and Ed Asch from Houston, which covers a lot of latitude. Here is Jean's letter:

"I have tried to dig up some information for news on our Classmates. I am seldom in contact with members of the Class of '34 outside of Montreal, but I am attempting to establish some liaison with them and as soon as I have news I will let you know. Here are a few notes on some of our Classmates:

"Vincent Rother is doing extremely well as an architect. Last year he was one of three architects to win a preliminary contest for the new National Gallery Building in Ottawa. One hundred and forty-seven firms of architects took part

in this competition. More recently, Vincent won a competition for the new city hall in Ottawa. Again there was a large field of architects in this competition. He is associated with John Bland who is a specialist in town planning.

"Claude Beaubien is now the sales manager for the Montreal branch of the Aluminum Company of Canada. He has recently been nominated on the Executive Committee of the Board of Trade of Montreal. Last summer he took an extensive trip with his family through Europe.

"It may be of interest to you that I was appointed recently a trustee of the National Gallery of Canada. I am also chairman of the National Industrial Design Council which is a committee devoted primarily to promoting better designs in industry. For several years now I have made a lot of chamber music with a string quartet.

"That's all for now, and I hope to have more news of you in the near future."

Ed Asch reports being fully occupied by the expansion of his organization which is a division of Vickers, famous name in hydraulics. Ed regrets that our Class is little in evidence around Houston.

A piece describing the expansion of Toledo Scale Company quotes some pearls of wisdom from Wally Wise who is their marketing manager. It appears that the growth of the supermarket idea complicates Toledo's products and that pre-packaging of foods reduces their need for scales. We are sure that Wally can cope with their problems.

Time magazine last December ran a story on Henry Regnery's book publishing business in Chicago. Apparently Henry, after flourishing as a textile manufacturer, is now having success publishing what *Time* calls "outcast authors." We also note in current successive *New Yorker* magazines a two part profile on audio man extraordinary Emory Cook who spent the freshman year with us.

Next month we shall have a long account of John Hrones' travels abroad. We have the following note from him on the activities of Neal Karr:

"Neal Karr is assistant to the vice-president in charge of manufacturing for Singer Sewing Machines. He is traveling extensively — has been to Japan, to Europe a number of times, and is headed to South America soon. Petey and Neal and their two children Jim (14 and 5 feet 9 inches) and Judy (15) live in Summit, N. J. Petey and my wife Margaret were roommates at Connecticut College and from their youthful appearance one would say that M.I.T. husbands are a good risk, all other information to the contrary notwithstanding. Neal suggested some interesting ways to spend a Friday evening in Paris (without the children)." — WALTER MCKAY, *Secretary*, Room 33-211, M.I.T., Cambridge 39, Mass.

• 1936 •

Plans for the 20th Reunion are finally set, as of this writing (March). The Weekapaug Inn decided that it would be unable to open its facilities as soon in the season as it had before, so it was finally determined to hold the celebration at the New Ocean House at Swampscott, Mass. — highly recommended not only by some

of the Committee members present, but also by several others who have been there for Reunions and other meetings. If you have not done so, your \$10 must be in to Mal Holcombe, 2100 Paxton Street, Harrisburg, Pa. forthwith.

As a result of a mailing to Class members, there is something of news to report from various parts of the world. Even Henry Cargen's address has been found: 855 Wellesley Avenue, Los Angeles, Calif. Unfortunately, what Brother Cargen has been doing in Los Angeles is not fully explained.

George Robinson writes from Bound Brook, N. J. where he is project engineer with The Bakelite Company, to say that in addition to his work he is president of the local Board of Education, and, more important, treasurer of the Township of Clark. (Very good for a Course X, and XIV man—Course XV members take notice!) He is also a member of the M.I.T. Educational Council, helping to advise on M.I.T.'s educational policies. A married man since 1940 George and his wife Virginia have a son David, 13, and a daughter Jill, 10.

Dave Werblin writes from his vantage point in New York City that he is now vice-president of Griffin Wellpoint Corporation specializing in stabilization and dewatering of soils for excavation of foundations, bridges, dams, pipelines, and other heavy construction work. In conjunction with Dr. Leo Casagrand of Harvard, Dave's organization has pioneered in electric osmotic soil stabilization in this country. As contractors and equipment manufacturers for this work, Dave's activities take him to the company's branches all over the country.

Elliot Cullati writes from Lawrence, Mass. to say that he will be on hand to discuss the bachelor situation with Vince Estabrook and Hank Lippitt at the June Reunion. Elliott is now a general manager of the J. F. Bingham Manufacturing Company, of Lawrence, engaged in the precision sheet metal fabrication of aluminum and magnesium, mostly for the military services. "Doc" Charlie Rife writes of his new career in ophthalmology — after graduating as a Course VI-A man. For a two year stretch, January 1956 to July 1958 Charlie will be on duty as a resident doctor at the Massachusetts Eye and Ear Infirmary in Boston. He has a valid excuse of being on duty the Reunion week-end, but if any of the class has a foreign "body" in his eye, Charlie says it will be his duty to remove it.

Wally Bain writes from Farmingdale, Long Island, and his work as vice-president and general manager of Republic Aviation Corporation. His biggest problem this spring is the protracted strike that the plant has had, with strikebreakers using commuting trains to enter the plant yard, and helicopters being provided to shuttle some of the executives in and out. Most of Republic's work is "classified" by the Air Force, so that not much of a description can be furnished.

Seth Nickerson (Course I) writes in his capacity as chief cook and bottle washer of S. R. Nickerson Company, Inc., at Hyannis, Mass. to say that his building contracting work on Cape Cod has been quite busy since the war years. It is not so

busy, however, that Seth will not be on hand at the Reunion.

Several of the Class members seem to have gotten themselves permanently or temporarily "lost" and new addresses are requested if anyone knows their whereabouts: Tom Charnley, last reported in Cambridge; Alan McKittrick, Ithaca; Ed Silk, Harton Company, New York City; Henry Janson, Beverly; Carl White, Cambridge; Leonard Lang, Troy, N. Y.

Next month there should be a round up of news to liven up the Reunion proceedings. In the meantime, if you can make the Reunion, write, wire or telephone Mal Holcombe at Aircraft Marine Products Company, in Harrisburg, or Tony Hittl, Chairman, at Linde Air Products Company, 30 East 42nd Street, N. Y., Murray Hill 7-8000 — and send in your \$10 check! — HENRY F. LIPPITT, 2ND, *Secretary*, 30 Rockefeller Plaza, New York 20, N. Y.

• 1938 •

A news item last fall reports that Dr. Alvin H. Howell has been honored by the Air Force through the presentation of the "Exceptional Service Award," the highest Air Force peace-time civilian award. The item states that "Dr. Howell, who has been on the Tufts faculty since 1940 and who is chairman of the department of electrical engineering and director of research in electrical engineering was cited for having 'distinguished himself by exceptionally meritorious service and outstanding accomplishment in fulfilling the needs of the United States Air Force for highly complex and mechanical devices for special air operations.'

"The blue-ribboned gold medal marks the culmination of three years of intensive effort made by Dr. Howell and his staff.

"In describing Dr. Howell's work, Milton Greenberg, Director of the Geophysics Research Directorate, the Air Force Cambridge Research Center component responsible for the work, stated that the Air Force's project, Moby Dick, a project for studying wind patterns at heights of 10 to 20 miles above the earth, could 'neither have been begun nor successfully completed without the extraordinary technical contributions of Dr. Howell and his staff.

"The Air Force Cambridge Research Center is one of 10 centers of the Air Research and Development Command," he explained. "The priceless information obtained from the Moby Dick project has opened vast new horizons to Air Force operations and has significantly augmented this nation's airpower," he said."

In November the *New York Herald Tribune* featured an article concerning the amount of research on gravity that is now under way in the U. S. Much work in the field has been encouraged by the Gravity Research Foundation of New Boston, N. H., which was founded and endowed by Dr. Roger Babson. Several aircraft companies are involved in such research; among them is Martin Aircraft, which is building near Washington a laboratory for the Research Institute for Advanced Study. Of interest to Classmates is the fact that the general manager of the institute is Welcome Bender.

"Barney" Oldfield sends a concise summary of his activities of the past few years

and of his present status: "August 1944–November 1945 – active duty, U. S. Army; November 1945–April 1947 – sales manager, Air Force Equipment, Electronics Division, General Electric Company; April 1947–July 1951 – Manager of Government Sales, Electronics Division, General Electric; July 1951–January 1954 – manager, G. E. Advanced Electronics Center at Cornell (organized this activity and originally managed); January 1956 – general manager, Industrial Computer Section, General Electric Company. – (This is a new component of the company, to be responsible for development and production of all computers built and sold by G. E.) Married – 3 children. New address – 1121 Westmoreland Ave., Syracuse, N. Y. – DAVID E. ACKER, *Secretary*, Arthur D. Little, Inc., 30 Memorial Drive, Cambridge, Mass.

• 1940 •

No news in this case is not good news. It has been some time since your Secretary has heard from or seen any Classmates, and in fact, he is beginning to wonder if his column has any readers.

The only news this month is that Frank Shackelford has been appointed the head of the industrial development department of E. I. Du Pont's Mexican affiliate, Du Pont, S. A. De C. V. Formerly, Frank was sales manager of the chemical division of the organic chemicals department of Du Pont.

Again a reminder that it is your letters, phone calls and telegrams that make this column of value. – ALVIN GUTTAG, *Secretary*, Cushman, Darby and Cushman, American Security Building, Washington 5, D. C. MARSHALL D. MCCUEN, *Assistant Secretary*, 4968 West 14th Street, Indianapolis, Ind. SAMUEL A. GOLDBLITH, *Assistant Secretary*, Room 16-325, M.I.T., Cambridge 39, Mass.

• 1941 •

LAST CALL FOR THE FIFTEENTH REUNION, MEN; GET YOUR RESERVATIONS IN IMMEDIATELY!

This will, of necessity, be the last reminder of our big Reunion weekend at Plymouth, June 8, 9, and 10. We will be at the Shore Club of the Mayflower Hotel, with all the facilities for swimming, golf, softball, tennis, and sailing, as well as the easy chairs for those who want to just relax and talk over old times. We do hope that as many of you as possible will arrive Friday afternoon in time to join in a cocktail hour and informal before-dinner dance, with music from the 1937–42 era for your reminiscing pleasure. After dinner, we are looking forward to hearing a program of fine music being arranged by Professor Klaus Liepmann, director of the M.I.T. Symphony Orchestra. We have been most fortunate in having Professor Liepmann agree to be with us for our Friday evening program. Prior to coming to M.I.T. he was on the Yale faculty and was the director of the Yale Symphony Orchestra. He has led the Boston Symphony, and has had a very complimentary press on his leadership of the M.I.T. Symphony. A very enjoyable evening is in store for all who can be with us then.

Saturday activities will include the sports mentioned above, an afternoon

cocktail hour, a banquet featuring a well-known TV personality, and an evening of dancing. Sunday's activities are to be on a somewhat informal basis, with church, sight-seeing, sports, or activities to suit the wishes of those present. For all who can stay, Monday, June 11, is Alumni Day at the Institute, with an all-campus program this year for the first time. More details of the Reunion week-end program and instructions on how to reach the Mayflower Hotel will be mailed to all registrants around the middle of May. If you haven't yet signed up, do so quickly. Send your registration fee (\$7.50 per person) to Ed Marden, 233 Harvard St., Brookline 46, Mass.

The following men, nearly all with wives, have signed up as of today (March 14, almost two months ahead of time!): Zach Abuza, Everett Ackerson, Bill Ahrendt, Bob Alfred, John Andersen, Hank Avery, Henry and Martha Auerbach, Bill Babcock, Ed Beaupre, Bob Blake, Rog Blum, Bill Bowes, Joe Bowman, John Brannan, Ivor Collins, Chet Corney, Art Covitt, Syd Cramer, Bob Demartini, Joe Dietzgen, John England, George Farnell, Ted Ferris, Rog Finch, Fred Flowers, Sam Fry, Herm Gabel, Joe Gavin, Carl Goodwin, Les Gott, Ray Harper, Luke Hayden, Jim Healey, Bill Hooper, Dave Howard, Ralph Hunt, Erling Hustvedt, Luis Jiminez, Paul Joyce, Walt Keith, Charlie King, Warner Knight, Walt Kreske, Bill Lipson, Mitch Marcus, John Macleod, Ed Marden, Sam McCauley, Milt McGuire, Dave McNally, Bob Meier, Earl Meyers, Warren Meyers, Kirk Miller, Herb Moody, Howie Morrison, Will Mott, Carl Mueller, John Murdock, Joe Myers, Lloyd Perper, Elmore Pillsbury, Harvey Pofcher, John Potter, John Renner, Rog Robertson, Howie Samuels, Max Schweinhaut, John Sexton, Dave Shapiro, Ed Sherburne, Bob Smith, Pete Smolka, Ken Spaulding, Herb Stein, Irv Stein, John Stern, Carl Stewart, Frank Storm, Al Surosky, Stan Tirrell, Ken Tsunoda, Walt Turansky, George Vineyard, Ted Walkowicz, John Waller, Reid Weedon, Art Weinberger, Ed Weinberger, and Bob Williams.

See you in Plymouth in June! – IVOR W. COLLINS, *Secretary*, 28 Sherman Road, Wakefield, Mass.

• 1942 •

In the course of reading through various journals I run across familiar names doing interesting things, to wit: Not too long ago Frank A. McClintock, of the Institute's Department of Mechanical Engineering, presented a paper on statistics of the fatigue of metals and attended a colloquium in Stockholm, Sweden. The sessions were sponsored by the International Union for Theoretical and Applied Mechanics. In a different journal I noticed that Eric M. Wormser, of the Olympic Development Company in Stamford, is president of the Southwestern Connecticut Section of the Optical Society of America. And just recently one of the Boston papers carried a feature article on the Shattuck Hospital for Chronic Illness. One of their major programs is cancer therapy using a two-million volt X-ray machine. This work was planned by and is under the supervision of Dr. Martin B. Levene.

These are the kinds of interesting items that don't show up in the clipping service and which most people are a little shy (as I believe their spouses are, too) about putting on paper unless they take the time to sit down and write a nice chatty note. So, the latest suggestion is that if you see an item about a Classmate or yourself and don't have time to write, please clip it, Scotch tape it on a postcard, and address it to your Secretary. No supplementary information needed although it will be gratefully received. Project Number 2: It is undoubtedly true that some people's activities haven't been mentioned since November 1952, and some not even since graduation. While I still have hopes of setting up an I.B.M. analysis that will show whose doings were recorded when, it would be a big help if any of our readers know of such cases. Please drop them or me a postcard so we can get caught up.

By way of Professor Proctor we received a note from Spike Staff³⁵, with news of Robert E. Staff (Spike's nephew) who received a master's degree in Public Health with us. Bob is one of the two physicians on Catalina Island. He lives at Avalon, population 1200 in winter, 12,000 in summer. The island is 26 miles off Los Angeles and is a collection of rock and hills 16 miles long. Quarrying is the only winter business. After six years of medical practice in Alaska he decided that his youngsters needed more sunshine, fruit juices, milk and vegetables. He looked over the places in California that were in need of doctors and chose Avalon as the best for charm and the children, if not for cash. He has a new, modern, all glass-front home with seal rocks, bird parks, and bison near by.

Albert B. Pack, of the Windsor Tobacco Laboratory staff, has been named State Climatologist at the U. S. Weather Bureau at Bradley Field, Conn. Dr. Pack's new post involves the study of past records of the bureau to obtain a better understanding of the local climate as it affects agriculture, business and industry. From his study the weather bureau hopes eventually to advise farmers on such problems as irrigation for periods of expected drought, control of plant diseases, and so on.

In the field of community affairs, William C. Tallman recently addressed the Public Affairs Discussion Group of Laconia, N. H. on the economic and technical aspects involved in "using the atom for peaceful purposes." His present work is with the Public Service Company of New Hampshire. Previous to this he was with the General Electric Company. Karl Baresel spoke recently at a meeting of the Hanson, Mass., Kiwanis Club on the use of plastics in floor coverings and tiles. Karl is a technical supervisor for the Hood Rubber Division of the B. F. Goodrich Company. Your Secretary has been giving talks on "New Horizons in Printing" to the Biological Photographic Society of Boston, the Junior Executives Club of Philadelphia, and the Methodist Church Men's Group of Belmont.

We have just received word that Jay V. Chase, who took his S.M. with us in Naval Architecture, has been promoted to Captain in the Navy. His address is U.S.S.

Yancey, AKA-93, FPO, San Francisco. The latest Alumni Fund statistics show that about 22 percent of us have contributed about \$18.00 each this year. The participation is a little higher, but the average contribution is a little lower than that of last year. In comparison with the classes who were in school with us we have about the same indices: more contributors but less per capita.

By the time this reaches you it will be just the weather for boat painting, gardening, golf, and tennis. Anyone for late spring skiing? Hope the sun shines warmly and often. — LOU ROSENBLUM, *Secretary*, Photon, Inc., 58 Charles St., Cambridge 41, Mass.

• 1943 •

I've been using every conceivable means possible to glean items for these notes, in an effort to keep my perfect record of not missing an issue. My latest device was to dispatch my in-laws to Havana, Cuba, to see Gus Calleja. My scouts reported that Gus is extremely busy with a large housing development of hundreds of homes, and that he is planning to be married on March 20. Gus was a most gracious host, as usual, as any of you will find when you visit Cuba.

Good news for the Class of 1977! A boy, Scott William, was born to Pat and Bob Anderson on December 26, 1955, in Needham, Mass. James O. McDonough is the president of a newly organized corporation, Concord Control, Inc., with a plant at 205 Broadway, Cambridge, Mass. Jim and a group of engineers are pioneering in the field of electronic "numerical control," which is a means of controlling machines by numbers, solving the costly problems of short-run and broken-lot production. The systems operate on the basis of information set up on coded punched tape, which in turn tells the machine what to do. If you have seen or read about the amazing milling machine which Jim helped develop, then you'll agree this company is destined to do great work.

Dr. Sidney Kibrick, who received his Ph.D. with our Class, and his M.D. at Boston University, was a recent speaker on the new polio techniques in West Bridgewater. He holds a research fellowship in the U. S. Public Health Service. — RICHARD M. FEINGOLD, *Secretary*, 49 Pearl St., Hartford 3, Conn.

• 1945 •

It has been many months since we have heard from any of you guys and gals — no letters, no phone conversations, no news clippings. How about some words of wisdom? In the interim we shall endeavor to recap the biographical sketches many of you returned about a year ago. If by chance, you don't learn of that old friend these next few issues drop us a line and possibly we can dig up some information anyway.

Hal Thorkilsen now residing in Fanwood, N. J. is Warehousing and Shipping Supervisor at Colgate-Palmolive in Jersey City. At the time this warehouse was opened a couple of years ago, there was quite a splash in the papers for you have never seen a warehouse until you see this baby under Hal's wing. From what Lois tells us, Hal never seems to be home with

Eric and Karen, 5 and 4 respectively. Dick Battin has been on the Staff at the Institute these many years; the only time we hear of him is an occasional room number change in the hallowed walls. Another true scientist is Bob Birkhoff of Oak Ridge National Lab's Physics Department. Several of you probably remember Donald P. Kahn. Don, as you will recall, was most active as an undergraduate in our Freshman and Sophomore years. Once he left for military service Don for all intents and purposes disappeared from the face of the earth for we had no address for him for years. Well you can imagine my surprise when I encountered said Don Kahn in the Vesper Club in Philadelphia one noontime last spring; Don now lives in Rose Valley, Pa. and is working for TV Guide in Philadelphia.

A note to our strong Pittsburgh contingent — please look up Al Werner '47 now living at 4104-1 Greenridge Road. Al moved out from Waltham about Christmas time; I do not know whether he is still with Raytheon Manufacturing Company. The old Navy bugler — your friend and mine — C. C. Bruik, civilian, is now up at E. E. Fairchild Corporation in Rochester, N. Y. The Rev. John B. Handrahan, S.J. formerly with the Physics Department at Holy Cross is now at Calegio de San Francisco de Borja in Barcelona, Spain. Charlie Hart is a design engineer at the Submarine Signal Division of Raytheon; Jack Atwood has been down in Charlotte, N. C. as a technical representative of General Aniline and Film Corporation. Knowing Jack's gift of gab we presume that technical representative is a glorified name for peddler. In case you wondered, Verna and Jack have a daughter Judith about three and a half years old. Bill Loeb is associated with Allan Grubber and others at Nuclear Development Associates, Inc. in White Plains, N. Y. As the name suggests the boys have many development contracts for the peaceful use of atomic energy. Bill and Stella along with young David live up in Chappaqua in suburban Westchester County.

How many remember Sam Haines? Sam, a Phi Kappa Sig, was one of the very few U-12'ers to choose a Marine Corp option and wind-up at Cornell University in July 1943 rather than the Graduate House. As one might expect Sam received his B.S. in Civil at Cornell and is literally pounding the rails in his native Philadelphia for he is supervisor of maintenance and work equipment with the Reading Railroad. Sam and Elizabeth Sawyer were married in July, 1948 and at last report had three little Haines — Carolyn, Sam and Nancy.

Our old physicist Ed Lerner reports that he is a staff member at M.I.T.'s Lincoln Laboratories. It makes my mouth water whenever I think of Bob Welch as sales manager of West End Brewing Company. Do you suppose he is paid by the case or would it be by the barrel?

Ray Pelley has been with Procter and Gamble for many years; he is now industrial engineer at the Ivorydale Factory. It was most interesting to learn about the soap industry when we saw Ray at last year's Reunion. In answering his biographical sketch, Chuck Patterson was most truthful for he indicated that he was

a "glorified peddler" for Metals and Controls in the Philadelphia area.

Bill Martin (Wm. George, Jr.) reports that eight years of marriage to Jeanne Robinson has produced three children — Lynne, Elizabeth and William, 3rd, in addition to many interesting transactions as a sales engineer (another peddler) with Johnson Service Company. I am unable to see the connection between the above two statements but that is what Bill reported: We were all sorry Bill was unable to attend the Reunion at the last moment. As we review our record cards, I believe Bob Maglathlin has had more changes of address without moving than anyone I ever knew! Between moving from or to either Boston's North or South Shore Bob has been chief of the theory group at the lab for electronics in Boston. Two of the Class's most eligible bachelors are Bud Hetrick, a brand manager for Armstrong Cork in Hartford, Conn. and Al Kriek, a development engineer at the Olin Film Division of Olin-Mathieson Chemical in Enka, S. C. (don't feel slighted Steve, we think you are a most eligible bachelor, too!). After many years of kicking around Jacksonville, Guy Gilleland and his bride Betty recently journeyed north to Westchester. Guy daily commutes to New York to his position as administrative assistant to the Manufacturing vice-president of St. Regis Paper Company. As you will recall, Tom Hewson put this company on our map with his many gifts of bags at last year's Reunion. Dave Clare modestly reports that he is acting plant manager of Johnson and Johnson's Surgical Adhesive Plant in New Brunswick, N. J. At the January salute to Karl T. Compton we had an opportunity to talk with a couple of J. and J. boys and it was thrilling to learn that not only is Dave doing a fine job but is also one of the most promising young executives on the premises. Walt Borden is a group leader in the process engineering division at the Esso Standard Oil Labs in Bayonne, N. J. Andy Marocchi is an engineer with Westinghouse in Pittsburgh along with Bill Humphreys. As you can see there has been no rhyme nor reason to the order of presentation — we have just been rescuing questionnaires from the clutches of our son before they were torn to shreds. Possibly you have a better suggestion for presentation — if so let's have it along with some news items. Will we see some of you at the Alumni Day barbecue on June 11 — C. H. SPRINGER, *Secretary*, 420 Leixington Ave., New York 17, N. Y.

• 1948 •

Several interesting news items have come to our attention during the past two months. From our Class President, Dave Cist, we learn that he has been flying all over the South in a \$350 airplane he spent last summer fixing. He commented that an open cockpit in mid-winter leaves much to be desired even though Dave is located in South Carolina.

Dave passed along to us a letter from Bob Mott which is quoted below.

"The day of a Bachelor Master at a school such as Hebron is pretty well filled from 7:00 A.M. to 10:00 P.M. with one sort of duty or another. Besides four

classes and preparations therefore, I have charge of the dining hall, the Camera Club, a dormitory corridor and am frequently called upon for other miscellaneous performances such as trips into civilization with the boys bound for the dentist. In addition to this, I am attempting to set up a temporary rifle range in our hockey arena. I should say a portable range to "spread out" in the arena — and to get some sort of riflery group going. Also, I have failed to mention that in the fall term I assist in the coaching of the lightweight football team and in the spring term I coach the junior varsity tennis team. So as I think you can see my time here is pretty thoroughly called for." It sounds like a wonderful life though.

The News Bureau has informed us that Ken Brock has been appointed Advertising and Sales Promotion Manager of Fenwall, Inc. of Ashland, Mass. The company is a manufacturer of industrial temperature controls and fire and overheat detectors for aircraft and industrial use. Ken goes to Fenwall with extensive experience in the sales promotion of electronic equipment and instrumentation. Formerly, he was Sales and Advertising Manager at Browning Laboratories, Inc. of Winchester, Mass. We learn that Dave Miller, who has been on a leave of absence from the Monsanto Chemical Company recently rejoined the Engineering Research Department of the Engineering and Research Division in Dayton, Ohio. Dave left Monsanto in 1952 to return to Purdue where he completed his studies for a doctor's degree.

Dwight Norris recently assumed the post of head of the clarification department of the Charles Pfizer and Company's Groton, Conn. plant. Dwight has been in the clarification department since January, 1955, prior to which he was in the antibiotic recovery department for three years, having the job of assistant department head. He joined the Groton Plant in 1949 as a production supervisor in the citric department and was transferred to antibiotic recovery in 1952.

Harry J. Beattie earlier this year joined the metallurgical unit of the General Electric Company's Materials and Processes Laboratory of the large Steam Turbine Generator Department at Schenectady, N. Y. Harry joined the General Electric Company in its Physics Training Program in 1949. He is now carrying out applied research in the field of high temperature alloys. In 1954 he received the Howe Medal from the American Society for Metals for his research on the structure of high temperature alloys.

And an announcement from the University of California in Los Angeles indicates that Werner Gumpertz, who is now assistant professor of Building Construction at M.I.T. was chairman of a panel on field problems in building construction.

On the domestic side, we received notice that Carl Accardo, a scientist at Evans Laboratory, Belmar, N. J. became engaged in January to Marjorie Ann Averill. We also received a card from Michael Kami announcing the birth of a daughter, Gail Joan, on November 17, 1955. If you have any interest whatever in the continuation of these Class Notes, we cannot urge you too strongly to drop

a line to your Class Secretary. — WM. R. ZIMMERMAN, *Secretary*, c/o Moraine Paper Company Division, West Carrollton, Ohio. RICHARD H. HARRIS, *Assistant Secretary*, 23 South Street, Grafton, Mass.

• 1951 •

JUST ONE SHORT MONTH AWAY! YE OLDE '51 REUNION IS SCHEDULED FOR JUNE 9 AND 10 AT THE MAYFLOWER HOTEL IN HISTORIC PLYMOUTH, MASS. For those of you who are firming up your plans to attend — welcome to the Reunion Band Wagon. And for Classmates who are still undecided — swing your thoughts to the delightful time of rollicking and reminiscing with your old buddies at Plymouth. Your Reunion Committee promises one and all a gay and memorable time. As of March 1 the response indicated that over 230 men and women stated that they are planning to come. And by now the figure surely is over 300! This promises to be a historic and record shattering Reunion — as can be expected from the past and present widely known exploits of the Class of 1951.

Let me add one or two points to fill out the picture that you have been getting via the Class mailings. First, our Reunion is aimed at both couples and stags. And the response indicates a good turn-out for both areas. I have been asked to reiterate that whether you are coming with your wife (and for the distaff side: with your husband) or whether you plan to come stag, you will have the time of your life. Why? Because our committee is breaking all barriers to plan the activities for both couples and stags, individual activities as well as general or joint activities. So the field is wide open and the choice is up to you whichever way you come. This Reunion will give you a wonderful change of pace from the demands of your day to day routine.

A word or two about the site of the Reunion. Last summer, during our vacation period at the Cape, my wife and I took a jaunt to see the locale of Plymouth. We found the visit a delightful one and our view is further reinforced when we tie in the normal interests of historic Plymouth with the '51 Reunion Activities. And it is worthwhile to note that Plymouth is a short distance from Boston and the roads connecting the two points make for good traveling. So why not make this week-end Reunion a grand opportunity for you to have a great time.

And now for a word about the Class Treasury. At this point all of you have received the summary data on our income and planned allocation of funds in the Class mailing prepared by your secretary. I want to report that a few more dues have arrived which makes us that much more solvent. Thank you again for the excellent response. And a word of salute to the men and women engaged in the Reunion effort, both in the Boston area and throughout the U.S.; all of them are making every dollar work double time which makes for a grand Reunion and keeps our Class Treasury solvent.

All of you have received details on our Class elections. I just want to add once more that the results of the elections will be announced at the Reunion.

And now for some news items. Jim Michelman and his wife, the former Enid Minton, are located at Mamaroneck, N.Y. Jim is doing finance work. Your Secretary was happily surprised when he met Dick Reuther in Plainfield, N.J. in January. Jim was on a shopping expedition with his fiancée. He is still with Scott Paper Company and lives in Swarthmore, Pa. Dick says the work provides a lot of intellectual stimulation. A statistician would probably calculate the probability of our chance meeting as about (to be conservative) one in a million. And yet from the notes I receive from you, the meeting I have described is rather common. For example, Gerry Lyons, while on destroyer patrol in the Formosa Straits a few years ago, ran across another Classmate on a destroyer which arrived at their station to relieve them.

Harry Zimmer is now with the U.S. Atomic Energy Commission at Richland, Washington. Ted Mangelsdorff reports that his present work with the Atomic Energy Division of Westinghouse in the Pittsburgh area keeps him quite busy. Horace Johnson, who is now a senior member of the microwave tube section for Hughes at Culver City, teaches at the University of California in the engineering extension division. His teaching focus covers group studies for upper division students in the field of microwave electron tubes. Pete Lang joined the Shell Development Company's Research Center at Emeryville, Calif. and his assignment is in the process engineering department. Jerry Levine can now be reached via Box 61, Navy #100 c/o FPO, N.Y.C., N.Y.

Irwin Manning joined the physics department at Syracuse University. Norman Peterson is now associated with the School of Chemical Technology, N. Dakota Agricultural College, at Fargo, N. Dakota. John Reed and his wife, Alette, are another group in '51 to make unusual news. John and Alette both passed their Bar Exams after completing their course of study at the Harvard Law School in June, 1955. Sam Rubinovitz was named government sales manager for the CBS Hytron Division of the Columbia Broadcasting System. Sam had previously been assistant to the director of sales.

As a final farewell note till next month we have a New Arrival Notice. The Aaron Brody family presented the news in the statistical fashion portraying the family growth since 1953. The welcome arrival: Stephen Russel — 7 lbs., 13.5 oz. Congratulations. A word to Stan Buchin: Hank Bernson '52, has recently joined the Manufacturing Planning Section of the Industrial Engineering Department at IBM in Poughkeepsie. **DON'T FORGET THE REUNION.** — STAN MARCEWICZ, *Secretary*, c/o The Lorraine, Route 2, Highland, N.Y.

• 1953 •

News items are rather lean in number this month. Fortunately, I practiced Stevensonian moderation in preparing last month's column and did not use all of the available material. This is a rather interesting situation when one considers that there are more than 800 people in the prime of life in our Class — at least 25 percent of whom are married. It seems

that all of us ought to be doing many things that are newsworthy—at least the latter group should be having babies.

In September of last year, two more of our number were led down the path toward marital bliss. The former Rosemary Roche and John F. Batter were married in Cambridge and are living in Oak Ridge, Tenn. In Lowell, Mass. on September 12, the former Barbara Ann Gardner became Mrs. George V. Colby, Jr. After a tour of the New Jersey coast, George and Barbara returned to Arizona where George is a lieutenant in the Army Signal Corps.

Only one marriage in the month of November—an Army wedding. At the chapel in Ft. Bliss, Texas Dawn Marcelle Bozetski and Roger Q. Young exchanged vows. Dawn is a graduate of the Westfield State Sanatorium School of Practical Nursing. Roger is a lieutenant stationed at Ft. Bliss (I do not know what branch of the Army Roger is assigned to—it seems to me, however, that Bliss is an armor center.).

Another wedding with a Texan atmosphere, Minnie Lee Ray of Victoria, Texas and Laurence H. Shaw were married just before Christmas. Minnie Lee is a graduate of Victoria Junior College. Larry is a lieutenant in the Air Force stationed at Foster Air Force Base, Texas.

I have one further note, this time about a repatriated Army man, Russel Kidder. Russ, after two years in the Army Chemical Corps at Ft. McClellan, Alabama is now employed by the Du Pont Company in the market analysis section of their polychemicals department. As for myself, I am still at Harvard Law School. About the only comment I have, is that Law School has been much more demanding of my time and energies than my course at Tech; of course many of you M.E.'s and E.E.'s, etc. could retort that us building engineers are second only to Club 15 for having had a joy ride at the Institute—maybe you're right! (Smile.)—VINSON W. BRONSON, JR., *Secretary*, 18 Mellen St., Cambridge, Mass.

• 1954 •

Due to a temporary (I hope) drought in news, this month's column will be shorter than usual. In order to prevent this sort of thing in the future, why don't you drop me a note, letting me know where, why and how you are? It would be appreciated by the other members of the Class, not to mention myself.

A note did arrive from Bob Shaw (good old Bob) saying that he and his wife Carol are living in Madison, Wisc. Bob is chasing after a Ph.D. in chemistry at the University of Wisconsin. The Shaw family now includes David Robert, who was born last October 19, and a Siamese cat known as Koko. Other sources bring word that Joe Bova is an assistant aircraft maintenance officer at Hickam Air Force Base in Hawaii. Charlie Loud and Patricia Arthur of New Haven, Conn., were married on January 14. Sam Patram has escaped from Uncle Sam and is now resting in Chicago prior to going to work (he's interviewing companies for a job). George Bartolomei has sneaked from Bayville, N.Y. to Wauwatosa, Wisc. for some reason. Ensign Al Block is running the Navy from Washington, D.C. Dave Chesler couldn't stay away

from M.I.T. and is now working in the Instrumentation Lab. Shel Dick is also at Tech, approaching an advanced degree. On the other side of the country, Tom Henderson has shipped out with the Navy from San Francisco. Meanwhile, back on the East Coast, Al McKenzie and John D'Amico are stationed at Camp Detrick, Md. John is in the inspection office and Al is in the physical defense division. Bill McTigue has returned from across the drink and is at Fort Belvoir. John Preschlack has suited up for Uncle and is at Elgin Air Force Base in Florida. And Dave Sternlight is at Aberdeen Proving Grounds, in the "S. O. D. School Trps," whatever that is.

Are you in the market for a life insurance policy? If so, you might think over our agreement with Mr. Stanley Turner of the Provident Mutual Insurance Company. Under this agreement, members of the Class may obtain policies and have the dividends earned accrue to the class's 25th Reunion Fund. The policies, in \$5,000 and \$10,000 amounts, have been approved by the Alumni Association as a means of raising funds. Previous classes have used this plan, and it should help us greatly in obtaining a gift for the Institute to be presented at our 25th Reunion. The premium rates on these policies compare favorably with those of other companies and, as with most life insurance policies, the beneficiary receives the principal upon the death of the policy holder. The annual dividends for the first twenty years (ten years for a \$10,000 policy) go to the Reunion Fund, are invested and draw interest. Approximately \$800 per man is accumulated under this plan, and the policy holder actually pays less than half of that. So, if you are looking for insurance and would like to help our 25th Reunion Fund as well, you might look into this plan. For all the dope, contact Bob Anslow, Chase D-41, Harvard Business School, Soldiers Field, Boston 63, Mass. And that's about it for this month. Let's have some news, huh, gang?—EDWIN G. EIGEL, JR., *Secretary*, 3654 Flora Place, St. Louis 10, Mo.

• 1955 •

Hello again! Spring, and soon finals, and then graduation, and then the Class of 1955 will be history—with all the new worn off. Have we settled down, feet on the ground, heads slightly below cloud level, to make our impressions on the cold, cruel world? Well, we really can't answer that question yet, but if you'll stick with us for a few more years. . . . Actually already some of our folks are making history of a sort. The first 1956 baby born in Brockton was a daughter born to Charles Pickering and his wife, Dorothy. Charles is working as a civilian employee of the Army Corps of Engineers in Boston. In the wedding department, Bill Chandler and Joyce Ann Woreing, who graduated in June from Wellesley, exchanged vows on January 21 at the Arlington Chapel in Fort Myer, Va., in a ceremony performed by Joyce Ann's father, Colonel Joel M. Woreing, who is Corps Chaplain of Fort Bragg, N. C. Alan Stauser was married also in January to Mary Young of Hingham, former B. U. gal. The Stausers are now in New Kensington, Pa., where Alan is a metallurgist

for the Aluminum Company of America. Another January wedding was that of Bob Buntschuh and Sara Katherine Hallet of Rockland, Mass. Bob's bride went to Pierce Secretarial School in Boston, and the two are now living in Ithaca, N. Y., where Bob is a research assistant at the graduate school at Cornell in electrical engineering. A recent engagement announcement was that of Victor Tyler to Mary Stuart McGuire of Cincinnati, who will graduate in June from Radcliffe.

Bob Burman was recently married to Barbara Gelman of Oak Park, Ill. They are now living in Champaign, both going to the University of Illinois. Bob is a teaching assistant in the Physics Department, working on a Ph.D. He writes, "Illinois is really a nice place (the school) if you stay away from the undergraduates. I was quite surprised! There is as much entertainment, music and plays as in the Boston area, and the football and basketball have certainly been better." He also adds "Married life is great." This all sounds fine, but I still feel that Bob misses the M.I.T. atmosphere, for he sentimentally writes all this on last year's VooDoo stationery with his name up top as General Manager!

In the way of the military, Don Foster, after completing basic training at Fort Dix, left for Hanan, Germany, where he is doing automotive repair with the Eighth Ordnance Battalion. Bill Murray received his commission on January 27 from the Navy OCS in Newport. He was assigned to Albuquerque, N. M. temporarily, but was expecting to be moved to Las Vegas for assignment with the armed forces weapons division. Big news from the Chemical Corps School at Fort McClellan is that a good portion of Course X has been added to its numbers. Hal ("Give me the north") Stubing, Johnny Hedberg, Max Miller, Dick Carroll, and Paul Chludzinski are now "basking in the heart of Dixie." Also a couple of strays from XV and XX, Blev Dunklin and Gary Brooks. Max, by the way, *finally* claimed a bride! Al Glueck, who wrote to one of your loyal columnists to tell her that she's really famous now (or haven't you seen her great contribution to the December *Industrial and Engineering Chemistry*?), is not suffering at Princeton, where he's working (?) for his M.S. in plastics. He misses Cambridge and Boston and Tech and Wellesley and Beans and Traffic and Rain, and he's not the only one! The Nasitirs are still dispersing news items most efficiently in the *Nasitir Newsletter* which, I fear, has a greater circulation among '55'ers than the T. R. What have they got that we haven't got? Oh, just in case some of you are dying to give to the old Alma Mater and need a source of information, our Class Agent, Glen Jackson, is now Lt. Jackson at Marana Air Base, Marana, Ariz.

Received a swell letter from Lester Lee postmarked Oak Ridge. Lee tells of spending the summer at Johnson and Johnson in New Brunswick, N. H. where he met Saul Blinder who was hired on a permanent basis. After the summer, instead of coming back to Tech, Les went West to California to take a job with a small electronics firm. It turned out they needed an electronics technician rather than a Course X man, and the job evaporated about December. After a leisurely, scenic

trip back East, he is now at the Oak Ridge Practice School run by M.I.T. He says, "After receiving a good healthy dose of radiation I'll be back in Beantown next fall to finish up the M.S." Les added a few tidbits about some of his AEPI fraternity brothers and Classmates. Walt Rubin is now at Cornell Medical School in N.Y.C., Bob Farrah is snowing the boys as an

instructor at Fort Devens, Stu Peltz is practicing his XV-B in Philadelphia, and Bill Friedman is living in Newton working with a new company that is manufacturing calculating machines.

Your lady Secretary once again extends an invitation to you to visit the House of "Unclaimed Jewels" in Cincinnati. We've recently added four new

jewels (now twelve in all) and a cook to the regime; it's even safe to eat here now. Other than Dick Yeghiayan, who is with the Formica folks, Cincinnati has failed to attract any of our number recently. — DELL F. LANIER, *Secretary*, 3011 Vernon Place, Cincinnati 19, Ohio. L. DENNIS SHAPIRO, *Assistant Secretary*, Room 10-483, M.I.T., Cambridge 39, Mass.

MONDAY, JUNE 11, 1956

IS

ALUMNI DAY, AT M. I. T.

Everything this year is On-Campus. The ladies join us for all events.

No after-dinner speeches. Instead, gifts, prizes, and entertainment.

IN THE MORNING

"Science and World Health." International authorities will discuss the scientific frontiers for medicine and the contributions of biology, sanitary engineering, food technology and the physical sciences to world health.

AT NOON

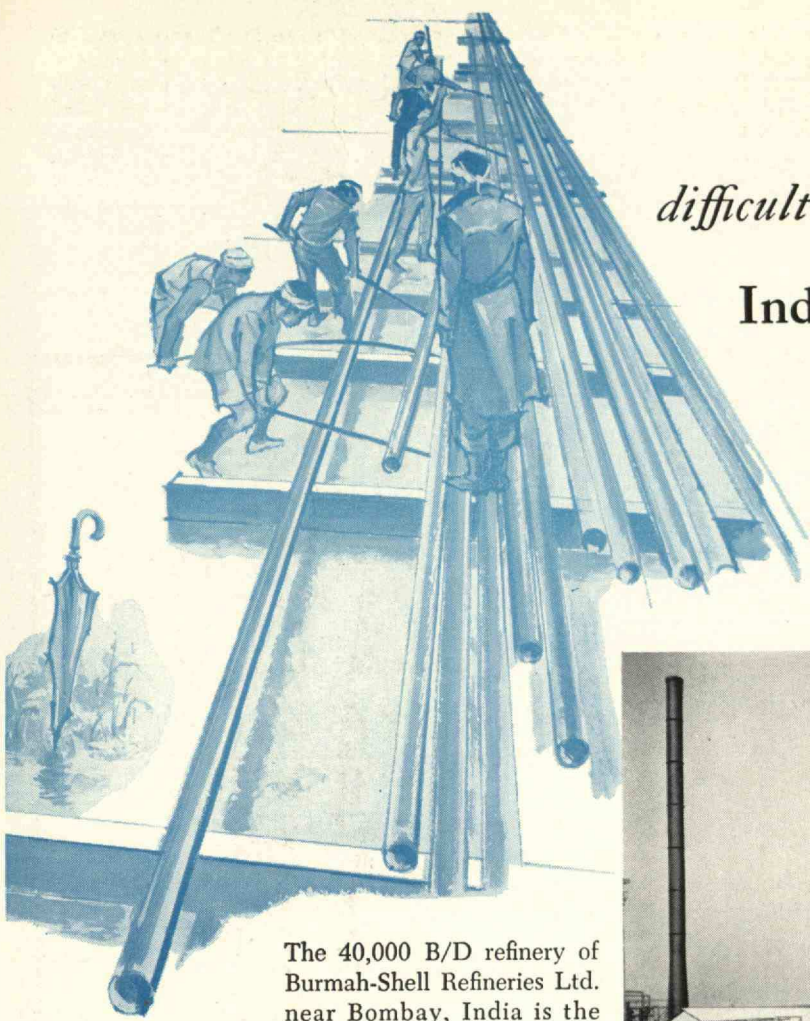
Luncheon in Du Pont Court where you will meet friends, do honor to an illustrious Alumnus, hear Dr. Killian give his personal report to Alumni, and have an opportunity to greet him personally at the President's Reception.

IN THE AFTERNOON

See for yourself some of M.I.T.'s contributions to the subject of the morning. Visit the Biology and Food Technology Laboratories, the X-ray and Electron Therapy laboratory for cancer treatment and the O.N.R. Van de Graaff generator, to name a few.

IN THE EVENING

Come to the first On-Campus Alumni Day Banquet. Spend a social hour with other Alumni and their wives on the green grass of Briggs Field. Enjoy a filet mignon dinner in Rockwell Cage, sitting with your Classmates and their wives. Share in the evening's fun with gifts for all and prizes galore.



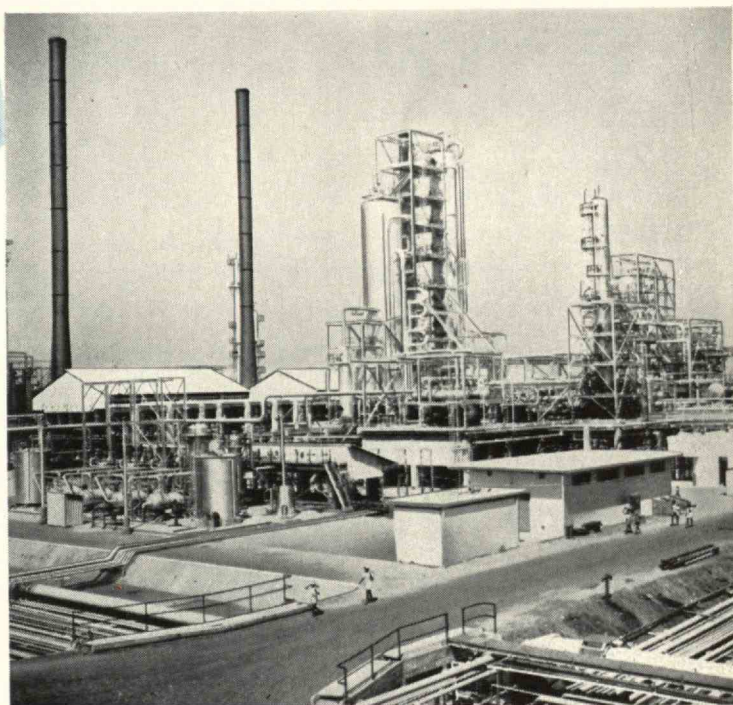
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a year ahead
of
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The 40,000 B/D refinery of Burmah-Shell Refineries Ltd. near Bombay, India is the country's largest. It is capable of supplying an estimated half of India's current requirements for finished petroleum. Although built in the face of difficult physical conditions, close cooperation with the owner in planning and engineering, and exceptional coordination of construction allowed Lummus to finish almost a year ahead of the original schedule.

A smoothly running refinery now, consisting primarily of crude distillation, fluid catalytic cracking, gas recovery, treating and blending units, offsite facilities and utilities, at the start it was only 450 acres of incredibly difficult terrain, without roads, railway or harbor.

Battling two of Bombay's worst monsoons, Lummus employed as many as 14,000 Indians at peak periods. Terrain was filled and drained. Roads, rail lines, harbor facilities, and the complete refinery were constructed. The job was kept moving *ahead* of the timetable — and finished 21 months from the start of construction.

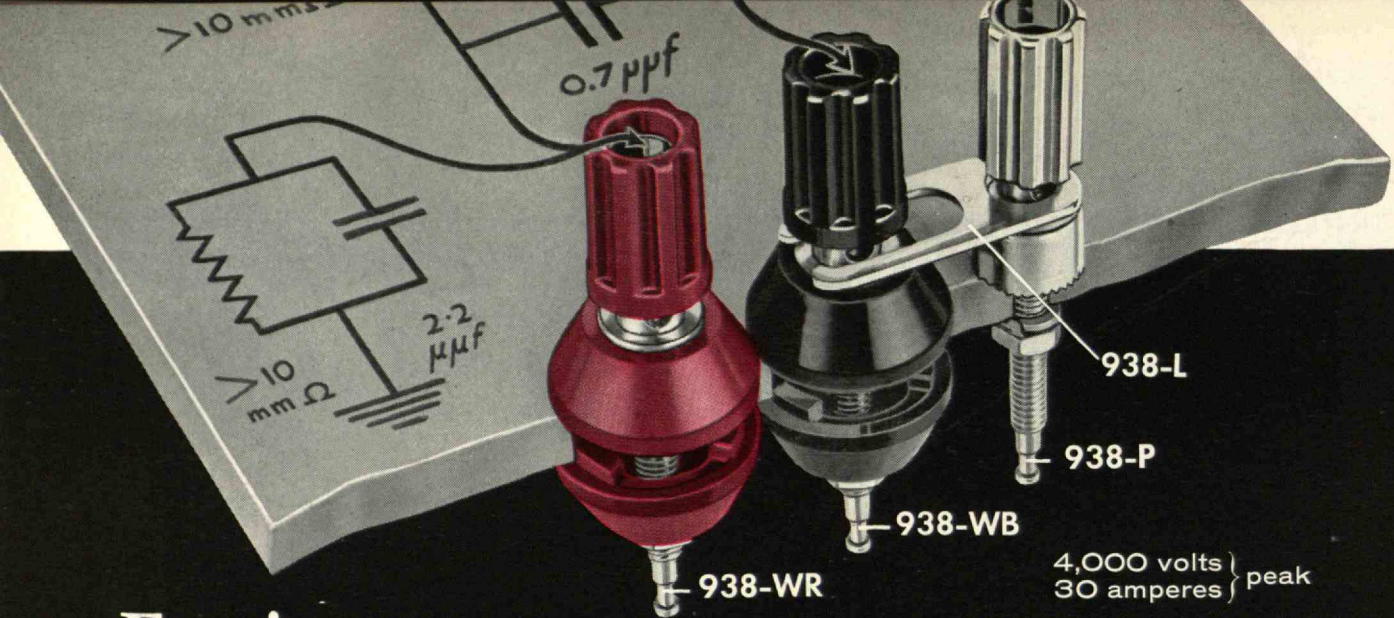


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Type 938 Binding Post series is typical of G-R's extensive line of high-quality components. These posts are chosen by the leading manufacturers for their excellent electrical and mechanical characteristics and for their convenience and functional correctness.

Type	Description	Unit Prices				
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938-P	Metal top B.P. with metal spacer	\$0.38	\$0.33	\$0.31	\$0.30	\$0.29
938-WB	Black top, cone insulation	0.53	0.45	0.42	0.395	0.38
938-WR	Red top, cone insulation	0.53	0.45	0.42	0.395	0.38
938-L	Captive Shorting Link	0.10	0.09	0.085		

The basic posts, without cone insulators, are available from all of these assemblies. Cone insulators, grounding spacers and other parts are sold separately, also. Write For Prices.

*Minimum quantity sold. Prices net — no further discount.

The replacement Type 938-Z Insulators fit Type 938 Binding Posts. Older Type 139 Posts can be used as well.

FEATURES

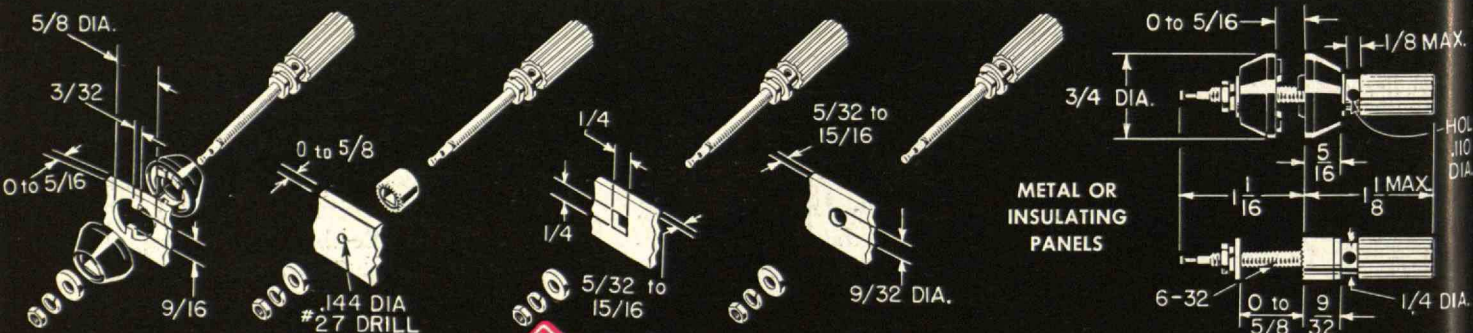
- ★ Polystyrene insulation throughout — cones hollowed to minimize solid dielectric
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- ★ High leakage resistance
- ★ Minimum moisture effects
- ★ Banana plug fits into body of post, NOT its top
- ★ Tops chamfered to seat banana plugs

- ★ All tops captive to prevent loss
- ★ Solder directly to turret on mounting stud — not to lug under nut
- ★ Grounding post with spacer for proper height — flat knurl on bottom of spacer bites into panel and prevents rotation
- ★ Cross hole in top contoured for firm grip without shearing for any wire from A.W.G. No. 40 to No. 10 — tops will accommodate telephone

cord tips, spade terminals, slender alligator clips etc.

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